THE

THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

A MONTHLY JOURNAL

OF

Practical Therapeutics

EDITED BY

H. A. HARE, M.D.,

Professor of Therapeutics and Diagnosis in the Jefferson Medical College,

GENERAL THERAPEUTICS;

AND

EDWARD MARTIN, M.D.,

Professor of Surgery in the University of Pennsylvania,

SURGERY AND GENITO-URINARY THERAPEUTICS.

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ORIGINAL COMMUNICATIONS.

DIETETIC AND MEDICAL TREATMENT OF CANCER.

BY L. DUNCAN BULKLEY, A.M., M.D.,

Senior Physician to the New York Skin and Cancer Hospital, etc.

In some of the reviews of my book on "Cancer, Its Cause and Treatment," the regret has been expressed that I had not given more exact details in regard to the treatment employed in obtaining the favorable results in the cases reported. This brevity was necessitated in part by the length and character of the lectures, which aimed rather at demonstrating the metabolic character of the disease, for further study and proof; and in part by the difficulty of being more definite, within the compass of the lectures, concerning the many and various measures necessary to restore perfect metabolism, and so alter the system to an anticancerous state, for each cancer case requires very special study and often most varied treatment. It was also supposed that the practicing physicians attending the lectures would be able to apply the principles enunciated.

It must be understood that there has not yet been demonstrated any one definite state or condition of the system which certainly leads to cancer, and perhaps there may never be. But all observation, as well as statistical evidence, and some laboratory studies, point so strongly to cancer as a disease of advancing civilization, and scientific research has so clearly eliminated the many suggested causes of malignant disease, that we are forced by exclusion to look to metabolic changes in the system as its cause. These, leading to a disordered blood stream, favor the disordered growth of certain body cells, culminating in masses to which we give the name of cancer. For no one questions that nutrition, good or bad, depends on the character of the blood furnished to the body cells.

In many reviews, and in notices of a former article,[1] I have been quoted as regarding meat-eating as the cause of cancer. This is only partially correct; although I have shown that the incidence of cancer is closely related to an increase in the consumption of meat in many localities, and have pointed out its relative infrequency in herbivorous animals and vegetarians. But the very fact that it may occur even among them proves that there is some other causative element not yet fully determined. I have also referred to high authorities who have satisfactorily demonstrated a metabolic disturbance of protein elements in cancer subjects, and an imperfect nitrogenous partition in the urine. Much more study will be necessary, both of the blood, including its plasma, and the various secretions and excretions, both in the very early stages of cancer and also after surgical removal, if we wish to learn all the conditions which lead up to the tumor formation and its recurrence after operation.

Long ago Abernethy wrote: "There can be no subject which I think more likely to interest the mind of the surgeon than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings

[1] Bulkley: Relation of Diet to Cancer. *The Medical Record.*

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with it nothing but disgrace, if the diseased propensities of the system are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance."

What then are the causes of this disturbed condition, and what are the means of rectifying them? The causes lie in the various elements which compose what we call modern civilization, and the escape from the disease lies in returning to the simple life and the avoidance of the causes of degeneration. Statistical and other proof has been presented elsewhere[2] to show that luxurious living, which includes the use of much animal food, coffee and tea, and alcohol, together with indolence, or want of sufficient muscular activity to burn up the waste products, in connection with the persistent neglect of hygienic laws, should be placed first among the causes of cancer. In one decade in England it was found that cancer mortality was more than twice as great among well-to-do men having no specific occupation, as among occupied males in general, the ratio being 96 to 44. Furthermore, it is now well recognized that the refining, preparation, and cooking of food often interferes with the proper supply of mineral and other elements of nutrition necessary to the system.

I know that it will at once be claimed that the disease occurs also among the poorer classes, who cannot be said to be subject to "luxurious living." But this latter is, after all, only a relative term, and we know that the poor continually do indulge in erroneous eating and drinking to a degree which does disturb metabolism in many directions, and we know what a large class of disorders of various kinds are thus occasioned among them. It has, however, been definitely shown in England, where statistics are accurately kept and analyzed, that cancer is very much more prevalent per 100,000 in those parts of cities which are occupied by the well-to-do than in the poorer sections.

[2]Bulkley: Cancer, its Cause and Treatment, New York, 1915.

The guiding of the diet for these cases is often not a simple matter. Protein the system must have, to build up and regenerate the cell life of the body. But the ox and the sheep get their protein, and even the iron, which man seeks in their flesh, from the ground, and the vegetable kingdom contains abundant proteid and mineral substances, even for man, if they are rightly sought for. And it is recognized that herbivorous animals, as also primitive races who subsist on the products of the ground, are relatively or quite free from cancer, whereas carnivorous animals, as also domesticated dogs and cats, are especially prone to the disease; and it has been repeatedly shown experimentally that a purely vegetarian diet inhibits or greatly diminishes the receptivity of inoculation with cancer material in mice.

But it is rarely satisfactory to simply order the cancer subject to subsist on a vegetarian diet without some special directions in regard to the same; this is especially true in regard to the poorer and more ignorant classes, and when it is attempted it is surprising to see how much they depend on animal food in some form or other.

To aid in understanding and carrying out treatment perfectly in the out-patient clinic for the medical treatment of cancer, at the New York Skin and Cancer Hospital, a four-page card has been prepared which is given to each patient, with instructions to study it and carry out every detail perfectly. On the outer sides are instructions in regard to cancer, and the danger of neglect, together with directions in regard to the preparation and consumption of food, mode of life, etc.; and on the inside pages a menu, or diet list, for each meal, for six days, which is here presented. This is to be repeated over and over again, and by this means the same diet does not fall on the same day of each week.

DIET FOR CANCER.

FIRST DAY.

Breakfast.	*Dinner.*
4 ounces Rice.	5 ounces Vegetable soup.
3 " Corn bread.	3 " Baked potatoes.
1¼ " Butter.	3 " Stewed celery.
½ " Sugar.	1 " Graham bread.
Hot water.	1¼ " Butter.
	1 Fresh apple.

Supper.

4 ounces Rolled oats.
2 " White bread.
1¼ " Butter.
4 " Stewed prunes.
¼ " Sugar.
Very weak tea.

SECOND DAY.

Breakfast.

Orange.
4 ounces Hominy.
2 " Graham toast.
1¼ " Butter.
½ " Sugar.
Postum.

Dinner.

5 ounces Pea soup.
3 " Macaroni.
3 " String-beans.
3 " Carrots.
2 " Bread.
1¼ " Butter.
Dates.

Supper.

4 ounces Cream of wheat.
2 " Graham toast.
1¼ " Baked apple.
2 " Crackers.
1¼ " Butter.
¼ " Sugar.
Very weak tea.

THIRD DAY.

Breakfast.

Banana.
4 ounces Pettijohn.
2 " White bread.
1¼ " Butter.
½ " Sugar.
Hot water.

Dinner.

5 ounces Corn soup.
3 " Baked potatoes.
3 " Spinach.
3 " Boiled onions.
2 " Bread.
1¼ " Butter.
Raisins.

Supper.

4 ounces Farina.
4 " Stewed figs.
2 " Graham crackers.
1½ " Butter.
¼ " Sugar.
Very weak tea.

FOURTH DAY.

Breakfast.

Raw apple.
4 ounces Cornmeal mush.
2 " Graham bread.
1¼ " Butter.
½ " Sugar.
Postum.

Dinner.

5 ounces Vegetable soup.
4 " Baked beans.
3 " Cauliflower.
3 " Asparagus.
2 " Bread.
¼ " Butter.
Orange.

Supper.

4 ounces Rice.
4 " Stewed prunes.
2 " Graham crackers.
1¼ " Butter.
¼ " Sugar.
Very weak tea.

FIFTH DAY.

Breakfast.

Orange.
4 ounces Cracked wheat.
3 " Corn muffins.
1¼ " Butter.
½ " Sugar.
Hot water.

Dinner.

5 ounces Sago soup.
4 " Spaghetti.
3 " Lima beans.
3 " Boiled onions.
1¼ " Butter.
Dates.

Supper.

4 ounces Cream of wheat.
Sliced orange.
2 ounces Oatmeal crackers.
1¼ " Butter.
¼ " Sugar.
Very weak tea.

SIXTH DAY.

Breakfast.

4 ounces Samp.
2 " Graham toast.
1¼ " Butter.
½ " Sugar.
Postum.

Dinner.

5 ounces Celery soup.
4 " Baked potatoes.
3 " Carrots.
3 " Spinach.
1¼ " Butter.
2 " Bread.
Figs.

Supper.

4 ounces Wheatena.
4 " Stewed figs.
2 " Uneeda biscuit.
1¼ " Butter.
¼ " Sugar.
Very weak tea.

This diet list has been pretty carefully worked out, so that it totals an average of about 2200 calories for each day, with 140 of vegetable protein, and a proper proportion of fats and carbohydrates. For some months this has been used, both in the hospital and in private practice, with very satisfactory results, and patients have thrived on it and increased in weight. It may be interesting to give also the contents of the last page, which contains directions to assist in carrying out this line of treatment:

"Some interchange of the different articles may be made, to suit the appetite or convenience of patients; but in the main this bill of fare should be followed.

"Bread at least twenty-four hours old may be taken as desired.

"A little old cheese may be grated on the macaroni and spaghetti, but not cooked with it.

"One boiled or poached egg may be taken for breakfast every other day, and very fat bacon on the alternate days, unless otherwise directed by the physician.

"It is desirable to eat the skins of potatoes.

"Each and every meal should be eaten very slowly, for half an hour, with long chewing.

"One tumbler of water is to be taken with each meal, but not when food is in the mouth; also a tumblerful of hot water one hour before breakfast and supper.

"No milk is taken unless specially ordered.

"The cereals are to be boiled with water, three or four hours, and may be cooked in the afternoon and heated in the morning, adding more water. Rice, farina, and cream of wheat require only an hour. Chopped dates, figs, raisins, or currants may be added to cereals when desired.

"All the cereals are to be served very hot, on hot plates, and eaten with butter and salt to taste (not milk and sugar). They are to be eaten very slowly, with a fork, and very well chewed.

"The crackers with supper may be varied to suit the taste; they should be eaten dry, with butter, and chewed very thoroughly.

"Nothing should be taken between meals, unless especially directed, and the life should be as simple and healthful as possible, with early and long bed hours."

The physician, therefore, who would successfully overcome a cancerous blood state, whether in a very early stage of the tumor or in its fuller development, or even when it has recurred, must fully realize the gravity of the problem involved and the seriousness of the work he has undertaken. He must study and strive to understand metabolism and its relation to the nutrition of the tissues. He must make, or have made, very frequent volumetric studies of the urine, in regard to all its ingredients, and grasp and rightly interpret the findings, certainly weekly, in connection with the diet and medication of the patient, which must be guided thereby, for it must be remembered that imperfect and deficient urinary secretion is a common forerunner and accompaniment of cancer.

He must also watch and study the patient in all aspects of life, for, as shown in the work already alluded to, there are very many elements which contribute to the degraded blood stream back of the malignant disease which results in the local lesions which we call cancer. Bad sanitation of all kinds, mental shock, strain, and worry, irregular bed hours, imperfect or neglected intestinal excretion, rapid eating and imperfect mastication, and a thousand errors in eating and drinking, all contribute to this, which cannot be treated of in a brief article, but are more or less developed in the reference mentioned.

It is readily seen, therefore, that the dietetic and medical treatment of cancer cannot be compassed in a small space. Nor can it be acquired or accomplished without very serious and continued thought and work on the part of the physician; moreover, it must be recognized that infinite patience and perseverance on the part of both physician and patient are requisite to overcome a condition of system which has been slowly developing long, long before the first vestigium or trace of the local lesion has been deposited. And when the malignant local process, or cancerous mass, has once been started, and especially when it has become at all well developed, and its cells are giving forth a secretion or hormone which is poisonous to animals and assists in poisoning the blood stream and degenerating its corpuscular elements, it is readily seen that it is a most difficult task to reverse the wrong metabolism, to regenerate the depraved blood, and to cause the absorption or return to normal of the diseased cells forming the tumor. However, this dietetic treatment must be continued a very long time, or indefinitely, in order to obtain satisfactory and permanent results. But that this latter can happen is abundantly shown by occasional cases of unquestioned cancer known to have entirely disappeared for many years, and sometimes reported, and also by my own experience during the last thirty or forty years, as detailed somewhat in the work already referred to.

But it must be here understood that, inasmuch as a well-developed cancerous mass has already become a menace to the system, by the degenerative properties of its secretion or hormone, it may be, and often is, desirable to remove the same, whether by the knife, *x*-ray, radium, or even caustics. But this local treatment or removal of the local product of disease can seldom, if ever, be undertaken alone with a positive expectation of a permanent cure, unless proper measures are faithfully and persistently carried out, almost indefinitely, "to alter and amend the state of a cancerous constitution, lest the disease should be revived or renewed by its disturbance," as Abernethy so wisely remarked long ago.

I am, of course, quite conversant with the good and even permanent results which follow the local treatment of cutaneous epithelioma, whether by caustics, *x*-ray, radium, thorium paste, or the knife; but these local lesions, which rarely metastasize, should be distinguished from cancer of the breast and internal organs, which furnish the bulk of the distressing cases which thus far have baffled control.

The dietetic treatment of true cancer, then, both prophylactic and active, consists in an absolutely vegetarian diet, so rightly proportioned in its vegetable protein, carbo-

hydrates, and fats as to afford perfect nutrition, and so arranged and administered as to be acceptable and attractive, in order that the patient may be constantly conscious of a general well-being and exhibit a steadily improved state of health. All this and other treatment should be carried on with confidence and an expectation of good results, for undoubtedly faith and hope contribute greatly to all therapeutic success, whereas the despondency attending the existence of cancer, and its reputed incurability, also contribute much to the disastrous results commonly observed.

The actual *medical treatment* of cancer cannot be briefly detailed, as may be judged from what has preceded, and because individual cases may require most different therapy to meet individual requirements; but some salient points may be mentioned. There is not, and probably never will be, any single remedy, or specific, "good for cancer;" although innumerable remedies, quack and other, have been vaunted, only to vanish after their uselessness or worse had been demonstrated by the disappointed hopes of many credulous sufferers. The very nature of the disease would indicate this, and would also indicate that no serum or vaccine would ever be found which could permanently effect a change in the metabolic conditions inducing the tumor formation, and the subsequent disastrous systemic conditions ending in death. It is, therefore, not proposed to offer any new or special remedy which can cure the disease.

But everything can be done, and very much should be done, both in the very early stages and late in the disease, for experience shows that these can have a profound effect in influencing the metabolic errors productive of cancer, or the precancerous conditions, as I have already pointed out;[1] these, with proper dietetic treatment, and attention to every hygienic detail, can not only check the cancerous process when once begun, but can cause the entire removal of early lesions, and even those later in the disease, including metastases. It is understood, of course, that this involves months of time, and with so terrible and treacherous a disease proper measures may be required indefinitely.

First in importance in connection with the internal treatment of cancer come measures which relate to body elimination, which is found to be imperfect in both the early and late stages of the disease, as I have shown elsewhere.[2]

Constipation or imperfect intestinal action, or intestinal stasis, as it is now called, is a prominent feature, both in very early cases and in those well developed. So constantly have I observed this, in large numbers of cases, that I have come to look upon toxic infection from the millions of microorganisms in retained feces as one of the chief elements in the degeneration of the blood stream which leads up to cancer. And this cannot receive too much care and attention from the physician in charge, and should be looked into so constantly as to secure a free, normal action of the bowels after breakfast and even oftener. It is impossible to go into details of this homely matter, but I can hardly speak too strongly of the importance of it, as I have learned from experience. It is not enough to give purgatives from time to time, nor do I find the use of mineral waters is desirable in these cases. I much prefer the vegetable laxatives very judiciously administered, which can commonly be diminished or dispensed with under the effect of proper food and abdominal massage.

The urinary excretion is invariably disturbed in cancer, and even very early in the disease indicates errors in the blood stream which should be most carefully watched and attended to. Few realize that the urine is secreted directly from the arterial blood, after it has received its nutriment from the alimentary canal and has been submitted to the action of the secretions of the various organs, including the ductless glands, as also to its oxygenation by the lungs. The kidneys therefore must be looked upon as the final judge and jury, in determining what perfect blood should be, exhibiting in their secretion the results of their efforts to re-

[1]Bulkley: Precancerous Conditions. *Interstate Medical Journal*, July, 1915.

[2]Bulkley: Cancer in Relation to Body Elimination. *New York Medical Journal*, July 3, 1915.

move elements injurious to the system and to keep the blood in a normal state. When we speak, therefore, of influencing the urine by dietary or other treatment, it only refers to the employment of such measures and remedies as shall rightly regulate the nutrition of the system, promote perfect metabolism, and secure adequate and normal elimination of injurious products.

In this sense, then, the urine, if very frequently and completely studied volumetrically, in its very many components, and correctly interpreted, affords us one of the very best aids in understanding and correcting the metabolic errors which underlie cancer. Mention has already been made that the nitrogen partition in the urine is generally at fault in cancer, as shown by repeated research laboratory reports; the urea is low and the acidity high, and alkalies, especially the acetate and citrate of potassa, play a considerable part in overcoming the systemic error.

But, as already stated, it is really impossible to give briefly and at all clearly any line of treatment which is to be invariably followed for the months or years necessary to overcome the cancerous condition. For it must be remembered that, as in regard to tuberculosis, whose death-rate, according to the United States mortality tables, has fallen over 25 per cent since 1900, by prolonged proper feeding and prolonged medical care, so in regard to a similarly chronic condition, cancer, there may be the need of any number of remedies from time to time to accomplish the end desired. This is no idle comparison, and only by recognizing the disordered constitutional state in cancer subjects, and by applying the most careful and intelligent medical measures, with proper diet and hygiene, can we overcome this dire disease, or prevent its occurrence. But that this certainly can be accomplished in a very much larger percentage of cases than is obtained by our present general method of surgery, etc., has been abundantly shown, and that with the general adoption of these views by the profession and laity there will be a material diminution in the morbidity and mortality of cancer is equally certain. It will undoubtedly take a long time to effect a startling change in the general death-rate from cancer, but with the faithful and continued application of these principles there can be little doubt but that time will show a steady diminution in the morbidity and mortality from this disease comparable at least to the twenty-five per cent reduction which has occurred in tuberculosis since 1900, by proper hygienic and dietetic measures.

351 Madison Avenue.

REPORT OF A CASE OF TETANUS.

BY FRANK BIRD, M.D., VALDOSTA, GA.

The following report of a case of tetanus successfully treated by tetanus antitoxin is of interest in that it emphasizes more than one important point in connection with this disease.

January 12, 1915. The patient, a white male, aged twenty, while walking in a darkened hall stumbled against a nail projecting from a box (containing coal). The nail caused a wound one-half inch deep situated four inches above the patella. Four hours later the wound was painted and swabbed out with Churchill's tincture of iodine, and sterile dressing applied. No pain or discomfort complained of.

January 13. The wound redressed, apparently doing well.

January 14. Wound shows some redness. Interior cauterized with carbolic acid. The patient walks with the leg extended and limps, but says that he has no pain. When asked to flex knee he does it slowly and deliberately, as if in anticipation of pain and through an angle of one hundred and fifty degrees, an almost normal although restricted flexion.

January 15. Redness around wound is increased and restriction of movement is increased. Some swelling appears about the knee-joint. The wound is kept open

and interior cauterized with carbolic acid. Patient asked to return in afternoon. He was given an immunizing dose of tetanus antitoxin, 1500 units, at six o'clock, and ordered to bed. The general condition of the patient is absolutely not disturbed. No change of the pulse or temperature; no general muscular stiffness or spasms; no trismus; no disturbance of appetite. Says he feels perfectly well and does not want to go to bed. Has no pain. Muscular rigidity is entirely local, involving apparently only the quadriceps femoris group of muscles of the right leg.

January 16. Rigidity of leg neither increased nor decreased. Pain experienced at site of injection of antitoxin. In the afternoon of this day the stiffness is increased and there is some pain in the knee. The leg is by no means rigid. There is some movement, but it is limited and slow, accompanied by a sense of muscular resistance. The leucocyte count is 10,600. Three thousand units of antitoxin given into the quadriceps muscles, this site being selected for the injection on the theoretical basis that it would neutralize and intercept some of the tetanus toxins on their way to the general system.

January 17. Patient can only flex the knee between fifteen and twenty degrees. General condition good. No other muscles involved in spasm than those mentioned before. There is apparently no effect on the general system from either the antitoxin or the toxin, except that the disease seems to be more or less arrested. To say the least, if it has progressed in the last twenty-four to thirty-six hours it is almost imperceptible. At 4 P.M. the leucocyte count is 11,200. General condition is unchanged. At 8 P.M. flexion of knee from twenty to twenty-five degrees; at same hour three thousand units of antitoxin injected into the buttock of the left side. The stiffness is entirely confined to the right leg.

January 18. A.M. Flexion of knee twenty-five to thirty degrees. General condition unchanged. No pain in leg or wound. Wound kept open and cauterized with carbolic acid. Temperature normal. At 4 P.M. leucocyte count 10,600. At 8.30 P.M. six thousand units antitoxin given into the back of right leg, as nearly as possible into the region of the sciatic nerve.

January 19. Flexion thirty to thirty-five degrees. Swelling of the wound and knee is less. Patient says he feels all right and he has a good appetite. At 4 P.M. leucocyte count 9400. At 8.30 P.M. fourteen thousand units of antitoxin given intravenously under aseptic conditions. Fifty minutes following this injection the patient was seized with a violent chill and was given morphine ¼ grain, with atropine 1/150 grain, which controlled the chill very shortly and patient passed a restful night.

January 20. Flexion of knee fifty to sixty degrees. General condition unchanged. At 4 P.M. leucocyte count 7600; flexion sixty-five to seventy degrees. At 8.30 P.M. flexion seventy-five degrees. The amount of flexion is so free, the muscular resistance in the leg is so much less, and the patient generally seems to be so much improved, that it is not thought advisable to continue the antitoxin. Temperature 97.8° F.

January 21. Flexion practically normal. The resistance is still diminished. Swelling of wound and knee has receded. At 4 P.M. the leucocyte count is 6400; at 8.30 P.M. the temperature is 97.6° F. No antitoxin given.

January 22. Flexion normal. Temperature 98.4° F. On palpation the muscles of the leg are relaxed. Patient has no pain or discomfort while flexing the limb. At 4 P.M. the leucocyte count is 7800; temperature 97.6° F. On both arms urticarial wheals are appearing. They are a rosy pink, raised, irregular in outline, varying from one-quarter to three-quarters of an inch in diameter. This shows a serum reaction (anaphylaxis). At 8.30 P.M. wheals are appearing on other parts of the body, especially the chest and the legs. They cause some discomfort by itching.

January 23. The wheals are thickly scattered over the entire body, almost confluent. The patient looks as if he was swollen. The face is reddened and the eyelids are puffed. The wheals are irregular in outline but more or less oval, varying from a quarter of an inch to an inch in

diameter. The itching and sensation of puffiness is controlled by large doses of sodium bromide, forty grains every four hours, and sponge baths of cool water containing bicarbonate of soda. From this time on the wheals disappeared and patient made a rapid and uneventful recovery.

CONCLUSIONS.

First, there can be no definite rules as to where a patient is liable to contract tetanus. We must remember that there are exceptions and be on the lookout for it in all punctured and lacerated wounds, especially, however, those inflicted by fireworks, blank cartridges, infected by garden earth or stable manure and street dirt. The above case is an exception to the general rule. The box that patient stumbled on had been upstairs all winter, containing coal, and there is no telling whether he received the infection from the nail or from his own clothing.

Second, in all suspected cases an immunizing dose of tetanus antitoxin (1500 units) should be given into the buttock. If tetanus has already begun it will surely develop further.

Third, trismus and spasms are sometimes the first definite indications of tetanus, coming on after a wound has healed, but in about one-third of the cases the first muscles to be involved in spasm or to show rigidity are those in the vicinity of the wound, as in the above cited case.

Fourth, any rigidity occurring in the part, following the wound, should excite suspicions of tetanus, and at least the immunizing dose of antitoxin should be given or treatment begun at once.

The condition, tetanus, is caused by the action on the nerves of toxins liberated by the tetanus bacilli, the most poisonous of these toxins being tetanospasmin. The purpose of treatment is not so much to destroy the tetanus bacilli, but to neutralize this powerful toxin and destroy its union with the nervous system.

Fifth, bacteriological examination of discharges for purposes of diagnosis is a useless waste of valuable time. The symptoms and history are more reliable and save time. The incubation period varies according to the amount of toxin in the system; it is usually from two to five days.

Sixth, in the treatment of developed cases one large dose of antitoxin is more reliable and saves more time in the treatment and does a greater amount of good than several small ones frequently repeated. Consequently, fifteen thousand to twenty-five thousand units should be given (slightly warmed) into the blood stream under aseptic precautions for an adult dose. If chills should occur following the injection (which is not the rule), give a hypodermic containing morphine grain ¼, with atropine grain 1/150. Nothing is so effectual as the above in stopping the chill. If no improvement in symptoms is noted in twenty-four hours, give five to fifteen thousand units into the blood stream. In cases further developed coming under observation with a history of repeated spasm, risus sardonicus, trismus, and outlook poor, give five to fifteen thousand units antitoxin into the subarachnoid space and fifteen to twenty-five thousand units into the blood stream. (Before giving the injection into the spinal canal, allow about as much spinal fluid to flow out as the amount of serum that you intend to inject. This gets rid of some of the toxin as well as making space for the antitoxin.) If symptoms are unabated, repeat above procedure in twenty-four hours.

Seventh, anaphylaxis appears to be less liable to develop after a single large dose than after repeated doses.

Eighth, large doses of bromide, chloral, or chloretone will usually control the spasms after the above treatment has had time to take effect. It may be necessary in some cases to administer chloroform a few times. These drugs also alleviate the symptoms of serum reaction, but probably have no direct effect on the condition itself.

Ninth, temperature is an uncertain symptom, though it may be present.

Tenth, treatment of wound. Wounds should be opened, cleansed with bichloride, and swabbed out with iodine or cauterized with carbolic acid, and should be kept open. Finally, they should be allowed to heal by granulation.

HYPERTHYROIDOSIS ASSOCIATED WITH GYNECOMASTIA.

BY JOHN KING FREEMAN, A.B., M.D., LOUISVILLE, KENTUCKY.

The personal observance of what seemed to represent the association of unusual clinical phenomena—*i.e.*, hyperthyroidosis and gynecomastia in the same patient—furnishes the incentive for this paper. Because of the comparative rarity of the association of such phenomena, separate consideration under two headings appears most appropriate.

HYPERTHYROIDOSIS.

This subject has been elaborately and repeatedly reviewed by different writers under various designations (Graves's disease, Basedow's disease, exophthalmic goitre, hyperthyroidism, etc.) during the last hundred years, and the symptom-complex as at present understood was probably recognized clinically at a much earlier period. The affection is frequently encountered in females, but males are not exempt; and while it may occur at any age, the most cases are first noted between twenty and forty-five years.

The clinical symptoms of hyperthyroidosis generally recognized are: varying degrees of prominence of the eyeballs, with a peculiar staring expression of the patient; circulatory (cardiovascular) disturbances, such as tachycardia, systolic murmurs, cardiac enlargement; sometimes venous pulsation over the enlarged thyroid; muscular tremors and progressive physical weakness; excessive nervous irritability and excitation followed by periods of exhaustion; insomnia may or may not be present, but disordered sleep is the rule; irregular appetite, diarrhea, and occasionally emaciation; excessive perspiration has been noted; pigmentation and other cutaneous manifestations from trophic nerve disturbance; dyspnea has occasionally been observed; more or less hypertrophy of the thyroid gland occurs at some time during the course of the affection. The most prominent and annoying clinical manifestations are those resulting from circulatory and nervous disturbances.

Nothing definite is known concerning the essential etiological factor which is responsible for the production of hyperthyroidosis, the numerous and diversified theories hitherto suggested failing to adequately explain the reason for development of the observed clinical symptoms. There evidently early occurs marked increase in functional activity of the thyroid gland, but the exact reason for this has never been determined. All the theoretical evidence thus far deduced in relation to the etiology has been often presented, and its repetition would avail nothing; likewise, the manifold histopathological findings from microscopic examination of the extirpated gland structure have been so thoroughly described that the light of present understanding justifies no attempt at further amplification.

Hyperthyroidosis in the male sex is rather uncommon, yet of eighteen cases recently reported by Mayo five were in males ranging in age from twenty-nine to forty-seven years. He says that "up to July 1st, 1914, six thousand nine hundred and sixty operations had been performed for goitre in our clinic; of these, three thousand three hundred and twenty-seven were performed upon patients with hyperthyroidism." The percentage of males as compared with females is not given, nor is any mention made of associated gynecomastia in any case.

The treatment of hyperthyroidosis may be medical or surgical, depending upon the condition present when the patient comes under observation. In the earlier stages—*i.e.*, before the supervention of marked hypertrophy of the glandular structure of the thyroid, as in the case to be reported in detail—medical treatment is indicated. The tachycardia and nervous manifestations are sometimes most difficult to control. Other symptoms must be appropriately treated when they arise. The patient should be kept as quiet and free from excitement as possible. Later in the history of the affection, however, thyroidectomy properly executed may be expected to accomplish beneficial results, and is therefore worthy of consideration.

GYNECOMASTIA.

The accepted definition of the anomaly known as gynecomastia is the development upon a male of mammæ resembling those of a female, either with or without the secretion of milk. The idea that the mammary enlargement was invariably accompanied by testicular atrophy has been proven a mistaken assumption. The majority of such individuals enjoy excellent physical health, and present no other anomaly or anatomic conformation. In some instances development of the glandular mammary structure differs in no essential respect from that which occurs in the female, and the functionating capacity may likewise approach or equal that of the feminine breast. "The mammæ of men will, under special excitation, yield milk; and in famines infants whose mothers have died have been thus saved" (Spencer).

There are recorded, especially in the older literature, many curious instances where gynecomastics suckled infants.[1] Hunter refers to a man who shared equally with his wife the suckling of their children. A sailor whose wife had died nourished their infant at his own breast. In another case the husband sustained the infant with his own milk for five weeks after death of the mother. The ability of men to suckle infants appears more common in the Indian and negro than in the white races. Franklin refers to a Chippewa whose wife perished during childbirth and who nourished the infant at his own breast. The left mamma was used and thereafter retained its unusual size. There was said to have existed in Brazil an Indian nation whose "women had small and withered breasts," and whose children owed their nourishment entirely to the males. Hall mentions a negro of fifty-five "who had suckled all his mistress's family;" the mammæ projected seven inches from the chest; the genitals were normally developed. Paullini and Schenck cite cases in which men suckled infants, and similar instances are recorded by Ford, Robert, Meyer, Fernandez, and many other authors. Galen described the anomaly, Aristotle observed men with mammæ like those of a woman, and Aegineta noted the peculiarity among the ancient Greeks. Subsequently the subject was discussed by Albucassis, Bartholinus, Behr, Benedictus, Borellus, Bonet, Donatus, Schenck, Vesalius, Schachner, Martineau, Buffon—all of whom had noted the anomalous presence of milk in the male breast. Peuch stated that "the anomaly was observed in one out of every thirteen thousand conscripts."

Like the majority of other anatomic developmental peculiarities, while gynecomastia is probably prenatal in origin, the abnormal mammary development seldom occurs until adolescent or adult life. This fact induced the belief that gynecomastia must be an acquired peculiarity, and based upon this hypothesis certain authors attempted to show the etiological relationship of heredity, epilepsy, hysteria, neurasthenia, tuberculosis, alcoholism, carcinoma, traumatism, and other equally absurd and unrelated clinicopathologic manifestations. The theory of hereditary influence seemed especially plausible inasmuch as the anomaly has been noted in several members of the same family. For instance, Savitzky reports a gynecomastic individual of twenty-one whose father, elder brother, and a cousin were similarly endowed. The patient's mammæ were 33 cm. in circumference and 15 cm. from nipple to base, resembling the breasts of an adult female. The genitalia were normal in all respects.

About the limit of present etiological understanding is that gynecomastia represents an anomaly determined in prenatal life, usually not developing until after puberty, the essential causative factor of which remains submerged in apparently hopeless obscurity. To a marine surgeon (Bedor) is due the credit for the first scientific exposition of this interesting subject. An elaborate monograph was later published by Villeneuve, and numerous contributions have since appeared, the most exhaustive being the treatise of Laurent, which contains the illustration of a man with mammæ

[1]For many of the data presented herein, concerning the older examples of gynecomastia, etc., the writer is indebted to the admirable work on "The Anomalies and Curiosities of Medicine," by Gould and Pyle, of Philadelphia, Pa., and it is desired that full credit be extended these authors for the material excerpted.

measuring 30 cm. in circumference at the base and pendulous like those of a nursing woman. Petrequin speaks of a male mamma eighteen inches long which he amputated, and there is record of a Frenchman "whose mammæ were larger than those of an adult woman." Wiltshire refers to an individual who since puberty had noted mammary activity accompanied by secretion of milky fluid. Hutchinson describes several cases of gynecomastia in which "the external genital organs decreased in proportion to the size of the mammæ and the manners became effeminate." Ansiaux saw a conscript whose left mamma resembled that of an adult female, the nipple being surrounded by a large areola; this breast had always been larger than the other, but since puberty had markedly increased in size. The genital organs were normally developed.

Morgan describes a seaman whose right mamma was not unlike the well-developed lobulated breast of a woman in size and conformation; there was a large pigmented areola; nipple same size as that of opposite mamma. The breast began enlarging at sixteen and a half years, and steadily increased in size, but had contained no milk at any time. The external genitals were normally developed. Another similar instance was that of a healthy man with normal external genitalia, who was said to have cohabited regularly with his wife, and whose right mamma began to enlarge when sixteen. Glandular substance could be distinctly felt, but there was no secretion of milk. Left breast normal.

Von Eiselsberg refers to a lad of fourteen in whom hypertrophy of the right mamma began a year before; the progress was rapid at first, but later became stationary. A curious circumstance was that this boy's elder brother had a "swelling of the left breast" most pronounced about the nipple, which subsided in a few months. Quintrie mentions a man with lobulated well-developed mammæ and also anal menstrual discharge which had persisted eleven years. When thirty-eight left mastalgia occurred, and examination revealed a granule resembling a bean in that breast. The right also became enlarged; both attained the size of an orange, but neither secreted milk. The following year pain was noted in the sacrolumbar region and blood escaped from the anus for two days, recurring every twenty-eight days for eleven years. The rectum was normal; the patient was genitally perfect and the father of four children. The author remarks that gynecomastia with milk has not rarely been observed, but anal menstruation in the male is very exceptional.

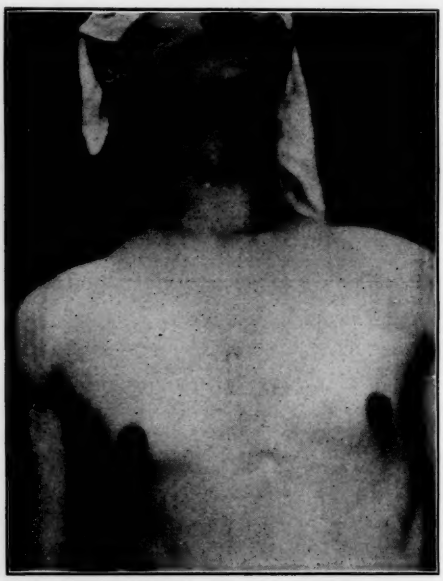
Sommer mentions a boy of fifteen in whom a short time before both mammæ became painful and began to increase in size. The family history revealed nothing noteworthy. The axillary and pubic hair scanty, testes normal; both mammæ equally developed, two inches in height and three and a half inches in diameter at base; areolæ light; Montgomery's glands conspicuous; nipples prominent. The gland structure could be definitely outlined by means of palpation, but secretion could not be expressed.

Coe saw a negro of nineteen with abnormal mammary development; he was sexually precocious, and began sexual intercourse and masturbation at thirteen, at which time the mammæ commenced to enlarge. Occasionally mammary pain was noted, especially during sexual excitement, "and there seemed to be a direct relation between the two conditions." The mammæ were four or five inches in diameter, and showed distinct glandular structure and well-marked areolæ. The sexual organs were normally developed.

According to Ellis gynecomastia is comparatively common among criminals, many such men having large nipples with pigmented areolæ. In the penitentiaries, especially the reform institutions, where the inmates are principally adolescent boys, gynecomastia is frequently observed. "It is generally unilateral, sometimes bilateral, and ranging from a rounded development of bust and prominent nipples, surrounded by deep pigmented areolæ, to well-defined mammary glands that have periodic seasons of congestion and attempts at functional activity, sometimes accompanied by the secretion of an opaque fluid and a sensation

of pain and weight in the region of the nipple" (Wey).

Shufeldt states that when studying various types of people he encountered two or three marked examples of gynecomastia. In a paper published in 1910 he presented one of the most remarkable instances of this anomaly ever recorded. The subject was "Chief Chewango," a native Zulu, aged fifty-five years, six feet tall and weighing about four hundred pounds. He had married "according to the tobola custom" more than forty wives, was the reputed father of over one hundred children, "and the supposition is that he had nursed some of them." The genitals were entirely male,



fully functional and normal. While the measurements are not given, according to the illustration of "Chief Chewango" the mammæ were enormously developed and pendulous, reaching to nearly the level of the umbilicus, and resembling the breasts of a woman who had nursed many children. The color of the skin being dark, the areolæ are invisible, and in the photograph the nipples are imperfectly shown.

Although the classification appears useless, Gruber divides gynecomastia into three varieties: (*a*) that in which the male generative organs are normal; (*b*) that in which they are deformed; and (*c*) that in which "the anomally is spurious, the breast being a mass of fat or a new growth." Under the accepted definition already mentioned, any male having mammary hypertrophy is classed as a gynecomast, whether the development be glandular or otherwise, and regardless of whether the gland functionates or not, unless the enlargement contains definite neoplastic tissue; in the latter event the natural classification would be a mammary neoplasm and not gynecomastia.

It appears that gynecomastia must be more common than ordinarily believed. In this country the anomaly has always been considered rare, and few instances have been recorded. It is interesting to note, however, that previous to 1900 Schuchart collected nearly three hundred such examples from the literature of the world, and doubtless many cases have since been reported, but the records are unavailable for review. In no previously recorded instance, so far as can be ascertained, has the association of gynecomastia and hyperthyroidosis been noted, therefore the following personally observed case appears to possess features of unusual interest:

A. B., a male, aged thirty-seven, married, father of four healthy children. His mother is living at the age of sixty-eight; father died at seventy-two, cause unknown; no special history of disease in the family. The patient is one of eight children. A sister aged thirty has goitre, and one of his daughters developed enlargement of the thyroid gland at the age of fifteen.

In June, 1914, the patient presented himself suffering with nervous symptoms. He complained that he could not attend to his work as a harnessmaker on account of nervousness and general physical weakness. Quietude was advised, and rest in bed afterward ordered. His heart action was rapid, and he suffered considerable distress on the slightest exertion. His pulse was always over one hundred, and upon the least exertion or excitement it would rapidly rise, sometimes to a point where it could not be counted. Shortly after these nervous symptoms became manifest, an enlargement of the thyroid gland was noticed, and the patient's eyes presented a peculiar stare.

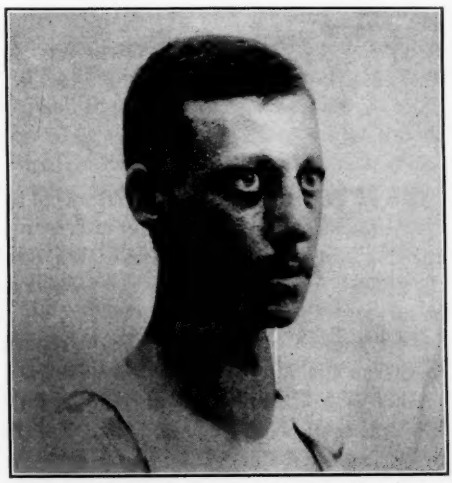
He was kept in bed for a month and thyreoidectin capsules (Parke, Davis & Company), 5 grains, ordered to be taken three times daily. In addition heart sedatives—strophanthin, digitalis, and convallaria—were prescribed. His digestive organs were carefully investigated, and after allowing him out of bed he was advised to take only gentle exercise and to avoid all excitement. Strophanthin and convallaria seemed to act best, but the thyreoidectin was continued. And it must be added just here that, in the early part of this man's affliction, I ordered thyroid extract, and in doing so made a mistake. His condition was aggravated by the administration of this remedy, for the reason that it was a case of hyperthyroidosis, not hypothyroidosis.

The patient suffered considerably from mental distress upon the least excitement or when anything unusual happened; he was exceedingly nervous and irritable; in fact his mentality seemed to be affected, and the

family were worried by the fear that he might eventually become insane.

Dr. H. A. Cottell saw the patient in consultation. We persisted in the treatment along the lines mentioned—strophanthin, digitalis, convallaria, thyreoidectin capsules—and the man has so markedly improved that six weeks ago he was able to resume his work, although he is still quite nervous and the staring expression is noticeable.

Photographs of the patient are exhibited. In addition to enlargement of the thyroid



gland, especial attention is directed to the other peculiar feature—*i.e.*, the abnormal development of the mammæ. This peculiarity was noted three months after the nervous symptoms appeared. Unfortunately the photographs do not show the mammary enlargement as plainly as could be seen with the eye. The focus upon the left breast is slightly better than the front view, and shows the large pigmented areola around the nipple. As the man was very sensitive he did not wish his face to show in the picture, therefore I present the photograph of another man with an enlarged thyroid gland to particularly illustrate the staring expression. In this latter case, however, there was no accompanying mammary enlargement.

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DISCUSSION.

DR. H. A. COTTELL: The case reported by Dr. Freeman is exceptionally interesting, because it represents an instance of hyperthyroidosis in a male which is rare, whereas in the female it is common.

In trying to develop anything in regard to the anomalous pathology as represented in this case, we are confronted by one of the deeper problems in medicine, and to determine anything definite concerning the etiology it would probably be necessary to revert to the intricacies of embryogenesis—*i.e.*, the factors which are concerned in determining the difference between male and female in the evolution of the fetus during uterogestation. It represents one of the more profound problems in physiology about which we shall probably never possess any greater enlightenment. That the mammæ should become enlarged in connection with hyperthyroidosis is a curious phenomenon which must be exceedingly rare. I do not recall having observed the two conditions associated excepting in the case reported.

There are several varieties of disease which may involve the thyroid gland. First is the simple hypertrophic enlargement often observed in young girls, but seldom in boys. In my experience of more than thirty years in medical practice I have rarely encountered enlargement of the thyroid in males, yet it is common in females. Why this should be so has never been adequately explained by physiologists. Simple hypertrophy of the thyroid, without tachycardia, without circulatory disturbance, is frequent in school-girls, and under tonics and alteratives (rarely cardiac stimulants) the enlargement subsides in the majority of cases. In others enormous hypertrophy of the gland ensues, which finally necessitates surgical intervention.

A sharp distinction must be made between simple hypertrophy of the thyroid and Graves's disease, as they are distinct and entirely different affections. Graves's disease is primarily a nervous manifestation characterized by tachycardia and other well-known symptoms, the tachycardia being secondary, probably due to hypernutrition from the "eternal pumping of blood" into the vessels which nourish the glandular structure. The possible later development of hyperthyroidosis and hypothyroidosis must be considered. Oftentimes patients with Graves's disease develop myxedema, and it is sometimes difficult to differentiate between the two conditions. From my experience I could relate numerous cases in which patients were treated for Graves's disease, and after the tachycardia had been relieved myxedema developed.

When I first saw Dr. Freeman's patient I thought the condition was rather serious, and for some time feared he would make little impression upon it. The patient suffered from hyperthyroidosis, and he prescribed thyreoidectin capsules manufactured by Parke, Davis & Company, which represent blood serum from thyroidectomized sheep. As Dr. Freeman has stated, early in his treatment of this case he gave thyroid extract, which of course made matters worse, as it "added fuel to the fire." When this agent was discontinued and thyreoidectin administered the patient began to improve.

In the treatment of hyperthyroidosis particular attention must be directed toward relieving the tachycardia. I have sometimes had patients with Graves's disease under observation for three to five years. I recall one case (female) especially in which I studied the disease for fully five years. The woman suddenly died from an intercurrent affection, much to my regret, because I believe she would finally have recovered from the hyperthyroidosis. This patient suffered almost constantly from tachycardia; the thyroid gland continued to

enlarge, and finally ceased to functionate, and she then developed myxedematous patches, principally about the ankles. I gave her sparteine, strophanthin, convallaria, and occasionally digitalis. I think digitalis should be used with caution in these cases, as it sometimes makes the patient worse. Strophanthin, sparteine, and convallaria are always indicated, but there are only certain times when digitalis is of benefit. I made a very careful study of that case. After the tachycardia had been relieved to a certain extent, the thyroid gland, which had already become functionless, showed marked reduction in size; the patient then became myxedematous, and it was necessary to cautiously administer capsules containing the thyroid substance. It was observed that small doses of thyroid gland—the thyroid sicca of the Pharmacopœia—would meet the indications. At first I gave her five grains four times a day, but as that quantity had a distressing effect it was reduced to two five-grain tablets a day, then one and a half tablets, and later one. I then ordered Burroughs-Wellcome thyroid tablets one grain each, and three of these per day not only controlled the symptoms, but the myxedema and other local manifestations subsided.

Of course the tachycardia gives us the greatest concern. The patient's heart action (systolic) is already too vigorous, and while the frequency may be reduced by the administration of digitalis, as a rule this drug should be withheld until the heart becomes feeble, when it may be advantageously employed. Strophanthin, convallaria, and sparteine are beneficial. I usually give sparteine in ¼-grain doses or more three to four times a day, and strophanthin 1/120 grain in tablet form is very effective and not disagreeable to the patient.

Dr. I. A. Arnold: About two years ago, while attending the clinics of Dr. Murphy, of Chicago, I remember that he had a case similar to the one reported by Dr. Freeman. In that instance, however, only one of the man's breasts was enlarged. There was a "red streak" extending from the thyroid gland to the mamma. Dr. Murphy incised the mammary enlargement, and found that it contained an accessory thyroid gland.

Dr. J. K. Freeman: I merely reported the case as one of the curiosities sometimes observed in the practice of medicine. This is the fourth case of enlarged thyroid gland that I have seen in males.

This man was so distressed at the time that it was quite a task for him to keep quiet long enough to have his picture taken, and he was completely exhausted by the nervous strain. His staring expression was similar to that of the man represented by the other photograph exhibited.

The patient has made a fairly good recovery, but what can be said about the prognosis? What can be reasonably promised the family? He is a comparatively young man, and they have been considerably perturbed over his future prospects. He has been able to resume his work as a harnessmaker.

For several months he was not allowed to leave his home. Later I had him come to the office, and after walking three blocks he would be in a state of nervous exhaustion. As stated by Dr. Cottell, strophanthin tablets have acted admirably in this case. The patient has been taking 1/100 grain three times a day. There does not seem to be any cumulative effect, and he has been taking that quantity for some time. I have had to give him bromides and chloral, but have not resorted to any of the opium compounds to produce sleep. For a while during the early part of last autumn he was restless and did not sleep well.

The case is quite interesting and I believe unusual. One significant point in the history is that his sister has a goitre, his daughter developed an enlarged thyroid gland, and a daughter of his first cousin also has a goitre. Whether this represents a family tendency or not, you can draw your own conclusions; but I am inclined to think it does.

IMAGINATION AND THE PROFESSION OF MEDICINE.[1]

BY HOBART AMORY HARE, M.D.,
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You will, perhaps, be surprised if I tell you that I have chosen for my topic "Imagination," with the hope that I may be able to show you what a useful factor it may be if properly utilized, and how harmful it may prove if it is not properly controlled. In some individuals imagination gallops off with their judgment so that they are in much the same position as Mazeppa strapped to the back of a wild horse. In others imagination lies so dormant that life is always a thorny and uninteresting pathway. In still others, in whom the fire of imagination burns brightly and normally, being under as complete control as is the fire in an open grate, it warms the heart, gives zest to life, leads to success, and makes the daily task interesting and joyful. In the man with a dormant imagination, or in the man who possesses no imagination, the practice of medicine, or of any other pursuit, is a road which "leads upward all the way; yes, to the very end." He leads a leaden existence because "a primrose by the river's brim, a yellow primrose is to him, and nothing more." Such an unfortunate individual may be considered to lead his life in narrow alleys in which the sunlight rarely falls, while he who has a well-developed and well-controlled imagination walks in wide avenues filled with sunshine and fresh air. Imagination gives talent to the artist, the sculptor, the author, the investigator, the explorer, and not least to the medical man. It changes wearying toil into enjoyable exercise. Without it the world would cease to advance, for if there was no image in the minds of men of what may be found by research, towards what goal could they strive? It took imagination to conceive the telegraph, the telephone, the multiplied uses of electricity, for the development of the science of bacteriology, preventive medicine, and modern therapeutics, and, for that matter, all the advances known to the world.

Laennec, the great French clinician, seeing a child amuse itself by listening at one end of a log while another child struck it with a stone, had his imagination stirred and devised the stethoscope, and Bell, seeing a child strike two stones together under the water while another child submerged its head to hear the noise transmitted through the water, got his first glimpse of the telephone.

It made Cope a great paleontologist and sent Leidy through his life surrounded by beautiful things, some of them ugly to the ignorant and unimaginative, but all of them lovely when viewed through his imaginative eyes. So lowly a thing as a rhizopod, or the flora and fauna of the intestinal canal of the rat, possessed interest and beauty for him when studied with the aid of his imagination, and they appear beautiful, even to us, when we examine the pictures of these organisms which he drew from life. Many years ago, where the laboratories of this Medical School now stand there was a bank of earth and stone through which a street had been cut. Leaving the Biological Department, where I was at that time attached to the Staff, I found Leidy standing at the foot of the bank examining closely a piece of rotten stone which had been dislodged by an Irish day laborer, who was prying off the top of the bank with a crowbar. The day laborer was regarding Leidy with very much the same degree of interest that Leidy was regarding the piece of rotten rock. As I approached, the laborer surreptitiously pointed to Leidy with an expression on his face which was a combination of jeering and pity, intimating that he thought the old man was, in his vernacular, "dotty." Here, you see, was an instance of a very small amount of imagination improperly controlled. When I approached Leidy, knowing full well that I could not approach him without learning something, with keen delight he described

[1]An address delivered before the students of the Medical School of the University of Pennsylvania, December 8, 1915.

the geological period in which this rock was formed, the conditions at various times which had resulted in its present disintegration, and, with still greater interest and delight, explained to me that he had met with this same vein in the neighborhood of Swarthmore tending in a direction which had led him to believe that it would be again found at West Chester, but never thinking that it would appear in West Philadelphia. He then took up the possible causes for its diversion from its normal pathway and, with his knowledge of geology, drew a fascinating picture of things which had happened in prehistoric times. I have often thought of that picture, presented by the laborer gazing down at Leidy, and Leidy, gazing down at the stone, unconscious of the former's presence, as one of the most striking contrasts between ignorance and learning, between labor and imagination, that the world could present. Take care as you go through life that you do not fall into the class of the man with the crowbar; however worthy his labor may be, see to it that you utilize the gifts of which he was not possessed, but which were given to you so that your feet may at least be placed upon the lower rounds of the ladder upon which Leidy climbed far away from the dross of earth into the golden sunshine of research.

Sometimes persons who know nothing of medicine express surprise that we find it interesting or even tolerable as a pursuit. They do not know that if we have the real ardor and imagination, we see in every case of disease alterations from the normal which are just as striking to us, and more important to humanity, than the wonders of Niagara, or the magnificent splendor of a raging sea, nor do they appreciate that in combating each individual disease we see the natural history of normal function distorted as Leidy saw the vein of rock deformed. That we see the imaginative and sympathetic aspect of the case, the varying mental attitudes of the relatives of the sick man, some of whom allow their imagination to distress them and to destroy their judgment, while others seem stupefied and inert, regarding the sick man as an onlooker would regard a ship tossed on the rocks by the sea, feeling that they are powerless to be of service.

The laity often fail to understand that by the use of our imagination we devise means to prevent other wrecks, whereas the ordinary onlooker at a shipwreck sees only the existence of a horrible catastrophe and rarely thinks out a plan whereby another calamity can be put aside.

He who knows nothing of the subject cannot understand how a medical man can see in a morbid growth, a typhoid ulcer, or the swollen glands of bubonic plague, as interesting changes in the life history of cells as a botanist sees in the development of a flower and the artist sees in the changing colors of a sunset. While to the lay mind such a statement may seem excessive, to the trained mind which can put aside that which at first appears disgusting, the fact is evident, and, furthermore, by the use of the imaginative faculty, we not only study the pathological process which is present in a single individual, but determine how we may prevent its recurrence in generations yet unborn. As I have already said, what more dreary life, filled with misery, can be found than that of the medical man who has no imagination? He sees in a cancer only pain, toxemia, and an offensive slough. What more hopeful and buoyant life than that of the medical man who sees before him the actual processes involved, and who strives to aid in the better conception of the disease in order that he may have not only a comfortable glow of knowledge but the joy of efficient service?

The man in the street sees that which interests him in a great crowd, pushing and jostling, and his interest is intensified if it begins to do damage, but he rarely goes so far as to allow his imagination to analyze the causes for the presence of the mob, or to consider the ultimate results of its existence. The physician at the bedside in the presence of acute inflammation sees in his imagination, as he would see actually through a microscope, another crowd composed of red blood cells passing rapidly along the center of the stream with lazy

white cells lagging along the walls of the vessels, just as the members of the mob on its margin stop and look in the windows of the stores. An accident occurs and the crowd of cells hesitates, the lazy white cells stop and soon begin to wander out into the adjacent parts. So many of them gather, with the object of out-wandering, that the vessel is soon completely blocked at the point of excitement. Other abnormal changes occur and, possibly, local death takes place, and after this the physician once more clearly sees in his mind's eye the wonderful processes by which nature clears up the results of the disaster, completely restores the part, or walls it off, when restoration is impossible, with far greater efficiency than it could be done by human hand. With these facts before him the medical man sees in a case of inflammation a complete study in natural history, and by the use of his imagination, coupled with investigation, develops measures to control a similar process if it arises in another individual.

But the physician who uses only his imagination in studying the disease of his patient without also studying his mental processes, and those of his friends and relatives, has only in part fulfilled his office and done little for his success as a practitioner. The imagination should tell the physician that each mind differs from its fellow in health and still more so in the presence of disease, and that changes in mental processes develop in the friends and relatives as well. Under these circumstances the physician's ability by the use of his imagination, to put himself in the place of the patient, or his friends, will enable him not only to treat the patient successfully, but to be a source of comfort and support. In the carelessness of youth and under the benumbing effects of long experience there is always the danger of regarding what to us is an every-day experience, as being of little moment to the patient, and, not rarely, it is only when the physician becomes ill that the proposition seems peculiarly interesting and novel. Your imagination will let you see clearly that when a human being is traveling along a road that is beset with new conditions, and possible death, he is in quite a different position from the onlooker, who, standing "on the side lines," to use a football phrase, sees the sick man swept off his feet by a swirling flood of complications and then drag himself out on the hot path of his fever for another trudge.

Imagination will also often reveal the fact that the physician is not needed so much to minister to the patient who is ill as to those members of the family who, not stupefied by disease, are suffering from anxiety and distress.

There is still another bearing of this subject, namely, the use of the imagination in your intercourse with professional colleagues. If you use this faculty of the mind you will probably never be guilty of a breach of professional ethics or courtesy, for you will be continually imagining how you would feel if you were in the other man's place. When as young practitioners you start out, filled with knowledge, your imagination will picture to you the way you will feel when, as a practitioner of thirty or forty years, you see a youngster settle in your town to be a competitor. Such a view will tell you how to act toward your senior, and your imagination had better go far enough to recognize that, while you may know many things taught by books, your older colleague knows many things taught by experience.

Imagination enables us to put ourselves in the other man's place and to see things as he sees them instead of as we see them. It, therefore, makes us just instead of unjust, merciful and tolerant, and he, with such a lively imagination as to see things as others see them, is sure of success, since he has a broad view and knows others as well as himself.

So far I have discussed with you the value of imagination properly used. The other side of the picture must be studied as well. While all the advances of the world may be truthfully said to be due to a well-guided imagination, most of the woes of the world may be said to result from imagination badly controlled — in other words, poor judgment. Uncontrolled

imagination is the producer of the crank, the socialist, the anarchist, the extreme pacifist, the extreme militarist, and is characteristic of the insane, in whom, as a manifestation of lack of balance, it is supreme. An insane pauper in Blockley who imagines he is Napoleon Bonaparte, or the Ruler of the World, is much less dangerous to the community than he who, while classed as sane, promulgates opinions, born of an uncontrolled imagination, which, because they glitter, catch the eyes of the unimaginative and lead them to believe in tinsel instead of gold.

It is easy to criticize the President of the United States for not taking a belligerent attitude, but, if you use your imagination, you may grasp the idea that he knows we are not prepared to be belligerent, unless we are also prepared to be badly thrashed, and you can imagine also that he cannot tell us this fact, for obvious reasons, even if he wants to defend himself. So, too, the pacifists state that officers of the army and navy want preparedness because they wish to magnify their importance and promote war. What a wild flight of the imagination this is! No one can see the power of modern guns and the horror of war and yearn for a share in it for the mere sake of fighting. A well-balanced imagination will enable us to perceive that the real reason a naval officer pleads for preparedness is the reason that would animate any of us if placed on a sheriff's posse and told to arrest the leaders of a mob armed with rifles while we of the posse were armed with canes. There would be a cry, We are ready to do our duty, but do not send us out to be butchered uselessly; if we must die in the line of duty, at least give us a fighting chance and let us accomplish something, even if we have to give our lives to service!

Bryan, when he advocated the silver doctrine, imagined he knew more about the science of finance than those who had devoted their lives to it throughout the world, and he imagined that the United States, if they would, could make silver represent what they pleased regardless of what the rest of the world thought about it. Now he imagines that peace is possible in a world in which all natural history teaches that there can be no peace. As an abstract proposition, as an imaginative fancy, universal peace is above praise, but it can be found only in Utopia. All life, in every grade, is a struggle for existence, whether it be in the world of microörganisms, in the vegetable world, in the animal world, each preys upon the other, and by this system of predatory existence every living thing is kept within proper bounds as to number, extinction being prevented by reproduction. There is no reason for believing that man is controlled by laws different from those that control other animals, but he is equipped with a high mentality by means of which he protects himself, not only, as in primeval times, against beasts of prey of great size, but at the present time against beasts of prey of small size which we call germs of disease. Where reproduction is excessive and imagination has run in a land of dreams, as in India, so that human beings are not protected from disease, we see the population kept within approximate bounds as to the possibility of living off the soil by epidemics. Thus, bubonic plague carries off the excess of population, producing a yearly death-rate rarely less than the entire population of the city of Philadelphia, and sometimes causing this mortality in one province alone.

In those countries in which imagination has resulted in research and in the prevention of disease, space also does not exist for maintenance when reproduction runs ahead of mortality. The starving population sees fertile fields or rich industries in other lands, and, following the instincts of self-preservation, it proceeds to possess itself of those lands and industries. Their owners defend their property—blows are struck—and that means war. War means the destruction of thousands of the best of lives, and so inexorable nature balances the birth-rate by the death-rate, if not by one means, by another. This state of things may not be what we would like to have. It may be a picture horrid to look upon; but nevertheless, in the words of a recent President of the United States, "we face a condition, not

a theory." As long as the lion is hungry and the lamb is succulent, as long as some are strong and some are weak, that some are crowded and some are not, so long as every one wants to better himself, so long will one prey upon another, and so long will there be war, pestilence, or famine, which have heretofore kept the race from growing too big for the earth. All the great nations of the world have burst over their original boundaries. Those of the European Continent have established colonies for their overflow thousands of miles away. Japan, after a sleep of centuries, is startled into activity by its overcrowding and takes Korea. Men coming from all over the civilized world crowded upon the eastern shores of the United States and pushed the American Indian to the wall in order that the lands, which he knew not how to take care of, might produce sustenance and profit.

As it is the law of nature that survival goes to those who are best fitted to maintain life, so it is the law that to be strong in defence, and if need be in offence, is necessary to a nation's life, for a nation is, after all, but an embodiment of many men. When the day comes when robins no longer pluck worms from the ground, the fish-hawk touches not the fish in the shallows, the lion lies down with the lamb, and every man has all he wants, then we may imagine that there will be universal peace, but it will be a peace of death, for every living thing that ceases to prey will die of starvation.

Another error in imagination is the belief that because a man has a clever imagination along certain lines he must be clever along all other lines. This belief is popular, and particularly so in the mind of the clever and imaginative man himself; yet all human experience teaches the contrary. The inventor, who must be imaginative, is usually an "odd genius;" rarely is a great artist a man with enough judgment to make a good investment; and a gifted public speaker lacks the imagination to perceive that, if he is Secretary of State, it is bad taste to occupy the platform with Swiss yodlers. Henry Ford, who imagined how to make a remarkable piece of machinery, now imagines that he is "an angel of peace," indirectly propelled by gasoline, and that his judgment and ability in matters of statesmanship, finance, human endeavor, and war are superior to those of the world's greatest statesmen and diplomats who have devoted their lives to such themes, and he, therefore, further imagines that by the use of his few millions, which are a drop in the bucket compared to the daily costs of the belligerents, he can settle a world war. Such a type of unbridled imagination is at once pathetic and absurd.

Then we have that type of imagination in which this trait is utilized not to make things better, but to make them worse—the demagogue who imagines he is going to convert sensible men to the belief that he is a born leader of the race, and he who imagines that no one can differ from him and be sane or worthy of consideration. We meet the man who imagines that because all is not right, therefore everything must be wrong, and, not content with this view, also imagines it is his function in life to make other people equally pessimistic and perverse. These are the men that add to our burdens, who chant the hymn of *Dies Iræ*, when others would be singing songs of gladness, whose clear days are clouded by approaching storms, who imagine that each day might be better and that to-morrow will be worse. Such persons were described in gentle language by Elizabeth Barrett Browning, who wrote:

Methinks we do as fretful children do.
Leaning their faces on the window pane,
To sigh the glass dim with their own breath's stain
And shut the sky and landscape from their view.

Or, again, when she wrote:

We overstate the ills of life and take imagination
Given us to bring down the choirs of singing angels,
Overshown by God's clear glory, down on earth to rake
The dismal snow instead; flake after flake covering all the corn.

We walk upon the shadows across a level thrown,
And pant like climbers, near the alderbrake
We sigh so loud, the nightingale within
Refuses to sing loud as else she would.

Let us, then, have a well-controlled imag-

ination that adds to the joy of living for ourselves and others, always imagine that things will be better rather than worse, and if imagination seems to threaten our judgment, at least to think, before we push it aside as useless, how much worse things might have been rather than how bad they are. Let us not be like the lame boy in the Pied Piper of Hamlin, described so well by the other Browning, who all his life let his imagination, as to what his former crusaders were doing, make him miserable, although he lived, and his imagination should have shown them to be dead.

> One was lame
> And could not walk the whole of the way,
> And in after years when they would blame his sadness
> He was won't to say "it's dull in our town since my playmates left."
> I can't but think that I am bereft of all the pleasant
> Sights they see that the Pied Piper promised me.

Rather let us be as was Dr. E. L. Trudeau: he died only last month, optimistic to the end throughout forty years of a desperate struggle with tuberculosis, which gradually involved tissue after tissue, and which rarely failed to incapacitate him, for long periods, at moments when his imagination had led him to a spot just short of the goal of brilliant result. For Trudeau, stricken at the outset of his career, driven to the wilds of the Adirondacks, separated by space and communication from scientific life, aided science, aided humanity, and made a mark in the study of tuberculosis which no time can efface. Well do I remember how, more than twenty-five years ago, I was in a position whereby I was able to obtain from Koch a sample of his tuberculin, when his first publication as to its use appeared and the world was wild with the thought that a cure for this universal disease had been found. I shipped it to Trudeau, as the one man of all men on this hemisphere who ought to have it. Two days later I received a telegram: "Bottle broken, words fail." The extreme cold of the Adirondacks had frozen its contents and burst the glass while it was in transit.

In 1910 the Congress of American Physicians and Surgeons honored itself by having Trudeau as its President. When he gave his address he was too weak to be heard beyond the first few rows in the audience hall, yet those beyond his words strained their ears to listen, and there was intense silence, for his presence and spirit spoke in clarion notes, and everyone knew that there was to be seen the triumph of the spirit over the flesh. What was the surprise and delight of his audience when they found that the subject of his address was "Optimism in Medicine." His address ought to be read, and I read it each year to some of my students, to every class which is about to receive its degree. In it he used these words:

"Optimism is a product of a man's heart rather than of his head; and on that account is rather frowned upon by many physicians whose scientific training naturally leads them to depend solely upon the qualities of the intellect, and look with suspicion upon any product of the emotions. We doctors are too apt to look upon 'brains'—that is, a man's purely intellectual attainments—as the criterion of his chances for achievement in life, and to ignore and even deprecate those qualities which are closely related to his emotions as rather likely to mislead and hamper him in his career. And yet optimism is a prominent factor in anything a man may achieve in life. It is a mixture of faith and imagination, and from it springs the vision which leads him from the beaten paths, urges him to effort when obstacles block the way, and carries him finally to achievement, where pessimism can see only failure ahead. Optimism means energy, hardships, and achievement; pessimism, apathy, ease, and inaction. Optimism may, and often does, point to a road that is hard to travel, or to one that leads nowhere; but pessimism points to no road at all.

"I have come in contact with many men of splendid attainments and opportunities who, by habit and education, have suppressed imagination and faith until their usefulness has been greatly impaired, and who accomplished little in life because the chill of pessimism ran in their blood, and the *qui bono* was the early death-blow to

every impulse at accomplishment. Lack of faith and imagination has quenched achievement in many men whose intellectual attainments promised most fruitful careers.

"It is, perhaps, true that the great majority of physicians, outwardly at least, appear to incline neither to pessimism nor optimism, and seem merely to float with the tide, without aspirations or ideals; but in reality few of them, in the innermost recesses of their ego, are entirely free from some degree of imagination and faith which they habitually quench, and which, if cultivated, would at least broaden the sphere of their activities and make life less colorless."

And at the close of his address he added these additional words, well worthy of our memories:

"Optimism is the one thing that is within the reach of us all, no matter how meagre our intellectual equipment, how unpromising our outlook at the start, or how obscure and limited our careers may be. It was about my only asset when I built my first little sanitarium cottage on a remote hillside in an uninhabited and inaccessible region. Viewed from the pessimist's standpoint, that little cottage as an instrument of any importance in the warfare against tuberculosis must have appeared as a most absurd and monumental folly. Optimism made me indifferent to neglect and opposition, and blind to obstacles of all kinds during long years of struggle before the value of sanitarium treatment became generally recognized. It enabled me to undertake the culture of the tubercle bacillus and delve in the complex problems of infection and artificial immunization, though I had no knowledge whatever of bacteriology, no laboratory, no apparatus or books. It has steadily upheld my faith in the possibility of ultimately attaining to an immunizing treatment for tuberculosis, in spite of many discouragements and years of fruitless work.

"Optimism enabled me to assume for over a quarter of a century the financial support of my work, and though the little cottage grew to be a village, and the workroom in my house a well-equipped laboratory, though their support each year required large and increasing sums, these have ever been forthcoming.

"In a long life which has been lived daily in contact with patients beyond the reach of human skill, who through months and even years of hopeless illness looked to me for help, I have indeed had need of all the optimism I could cling to. It has ever been a precious asset to me, and I hope to those about me as well, and has never entirely failed me."

It may be well said that Trudeau gained his optimism through his imaginative power.

He closed his address with these words:

"As Stevenson says, if when age and infirmity overtake us 'we come not within sight of the castle of our dreams,' nevertheless all will be well with us; for 'to travel hopefully is better than to arrive, and the true success is in labor.'"

But, let me add that "true success is in labor" only when it is lighted by the lantern which is called "imagination," which can change the gray dawn of our beginning into the roseate sunset of our end.

THE NEWER ANTITOXIN TREATMENT OF DIPHTHERIA.

The *Lancet-Clinic* of June 12, 1915, contains an article on this topic by STAMMEL. He concludes as follows:

1. Do not be afraid to give what is considered a large dose of antitoxin, thus avoiding repetition of dose.

2. A child needs relatively more antitoxin than an adult. Duration of disease, extent and location of membrane, and degree of toxemia should be the guide to proper dose.

3. All croup cases which do not clear up under ordinary treatment in two to four hours should be considered diphtheritic, and treated as such. Do not wait for report on culture—give sufficient antitoxin immediately.

4. Chronic nasal discharge in children, which does not react to treatment, should be suspected, particularly if there be a serogangrenous discharge which excoriates the upper lip.

5. The earlier the proper treatment is instituted, the fewer will be the complications, and the lower will be the mortality.

EDITORIAL.

THE TREATMENT OF SUDDEN CARDIAC ARREST DURING OPERATIVE PROCEDURES.

From time to time we have called attention in the pages of the GAZETTE to the subject of resuscitation of the apparently dead by massage of the heart. Massage of the surface of the body over the heart has frequently been practiced, and a number of writers have asserted that this method has seemed to be potent in reëstablishing cardiac action. In other instances where sudden cardiac failure has developed during abdominal operations, massage of the heart through the diaphragm has resulted in resuscitation, and in some instances the surgeon, driven to desperate measures in the face of death, has incised the diaphragm, introduced his hand through the incision and applied direct cardiac massage, thereby succeeding in establishing renewed cardiac action.

So far as we know, little or nothing has been done to determine the effect of injecting cardiac stimulants into the pericardial sac with the idea of bringing them in direct contact with the failing, or arrested, heart, and when the circulation has ceased to such an extent that there is no hope of an intravenous injection being carried to this viscus. We have, therefore, read with a good deal of interest the communication by Gunn and Martin in the *Journal of Pharmacology and Experimental Therapeutics* for July, 1915, in which they discuss intrapericardial medication and cardiac massage. In order that there might be no doubt that the drugs have entered the pericardium, and in order that their observation of the action of the heart might be accurate, they made an opening in the chest wall before giving the injection, and they found that atropine, pilocarpine, and adrenalin when injected into the pericardial sac in the rabbit rapidly produced very characteristic effects on this viscera, these effects being due to a local action and not to absorption of the drugs into the general circulation. We presume that digitalis acts so slowly that this method of employing it cannot be utilized with advantage in the presence of sudden cardiac failure when death is threatened.

So far as massage of the heart is concerned, they believe that the compression should be gradual, relaxation should be abrupt, and that the rate of compression should be less than half the normal cardiac rate. The massage should be interrupted at short intervals for a few seconds to allow spontaneous beats to develop. The effect of the massage is a double one, in that it empties the cavities of the heart, if they are engorged to such an extent as to be in danger of paralytic distention, and, secondly, massage acts as a mechanical stimulus to the heart muscle. They think that there are four ways in which cardiac massage can be practiced: First, by direct compression of the heart through an opening in the thoracic wall. This method is manifestly out of the question in human beings except under very rare circumstances, as, for example, in some major operation upon the left thorax. Second, by compression of the heart through an opening in the abdominal wall, which, as we have already pointed out, has been practiced in a considerable number of cases by surgeons operating on the organs of the abdominal cavity. Third, by simple compression of the abdomen as near the heart as possible; and fourth, by a similar compression of the thorax, which, as we have already said, has been frequently practiced, sometimes with favorable results, in cases of cardiac failure in human beings.

Gunn and Martin claim that direct thoracic massage combined with the intrapericardial injection of adrenalin can revive the heart in practically any case of chloroform poisoning in the rabbit, even though the treatment be not begun until fifteen minutes or more after the heart has completely ceased to beat. This is a very interesting and important statement, not only because it illustrates the fact that efforts at resusci-

tation should be continued for a long time after death seems inevitable, but also because it would seem to indicate also that chloroform when it arrests the heart does not act as a destructive cardiac poison, but simply interferes with function, and that this function is restored by adrenalin.

In the experiments made by Gunn and Martin they used for the purpose of resuscitation in animals artificial respiration through a tube in the trachea, intrapericardial injection of adrenalin, and massage through an opening in the abdomen.

After cardiac action is once reëstablished the feebleness of the circulation is to be still further overcome by the intravenous injection of either adrenalin or pituitrin.

While some of these measures seem heroic when applied to human beings, the presence of an otherwise inevitable death will probably make every surgeon feel that he is more than justified in meeting so grave an emergency by these measures, radical though they may be. Desperate conditions must be met by desperate measures, and, although these measures may fail in a large proportion of cases, the saving of human life occasionally by their institution justifies their performance, although care should be exercised that the condition of the patient is actually so grave that last-resort methods are justified.

THE TREATMENT OF DIABETES.

One of the difficulties which exist, in the treatment of this grave and obstinate condition, is that it is almost impossible to find a patient who is willing to take sufficient care in regard to the various aspects of his case to enable the physician to give the disease adequate study. The average patient thinks that when a diagnosis is made the treatment should begin at once and is restive at any delay, even if the physician explains to him that, after a diagnosis of diabetes is reached, each case must be studied for itself, because in every instance in which this disease occurs such variations take place that the treatment advisable for one man may be inadvisable for another.

It has long been recognized that although the presence of sugar in the urine is essential to the diagnosis of diabetes mellitus, nevertheless the amount of sugar is not necessarily a gauge as to the severity of the disease. Rapid loss of weight, marked thirst, intense hunger, and the development of so-called acidosis, are of much more importance from the diagnostic and prognostic standpoint. It is nevertheless important, in the treatment of every case, to determine the average amount of sugar which is passed in each twenty-four hours under the diet to which the patient has been accustomed, to gain some conception as to the amount of acetone and diacetic acid eliminated, and, more important, at least to have a qualitative determination of β-oxybutyric acid.

An examination of a single sample of urine representing the amount passed in twenty-four hours gives us no right to suppose that the quantities of sugar in other twenty-four-hour specimens are the same, and if the physician, relying upon such a single test, institutes treatment, medicinal or dietetic, he cannot conclude, a few days later, when the sugar is lessening or increasing in amount, that his therapeutic measures are responsible for the improvement. Furthermore, in many cases of diabetes it is essential that the patient shall be, to a greater or less extent, deprived of all starchy foods, and, it may be, on certain occasions subjected to a so-called "starvation day," during which he has nothing but green vegetables to allay his sense of hunger. To place a patient already suffering from a considerable degree of so-called acidosis upon a very limited diet, or upon one deprived of starch, is equivalent to inviting an attack of diabetic coma in some instances. To put the matter in a concrete form, the physician should not meddle with the complex problems involved as to metabolism in a case of diabetes mellitus until he has, to use a political phrase, obtained a clear idea of the complexion of the case. It is always the duty of the physician to help nature rather than to interfere with and impede her efforts, and if the body, utilizing its protec-

tive process in this disease to ward off disaster, is obstructed rather than helped, the physician ceases to be of assistance and does more harm than good.

Some time since we noticed in the columns devoted to book reviews a small book entitled "The Starvation Treatment of Diabetes," the plan being worked out by Dr. Frederick M. Allen. Of course, the starvation treatment of this malady, in one form or another, is by no means novel and has been practiced by many physicians for many years. The particular plan devised by Dr. Allen undoubtedly has done good in a considerable number of cases. That it is wise to follow it rigidly in all instances we seriously doubt. The plan is as follows:

For forty-eight hours after admission to the hospital the patient is kept on an ordinary diet to determine the severity of his diabetes. We think that this is too short a period, since our experience has shown that this determination can only be approximately made by a study covering from five days to a week. At the end of two days the patient is put to bed and no food allowed save whisky and black coffee, the whisky being given in the coffee, one ounce of whisky every two hours from 7 A.M. to 7 P.M.—in other words, six or eight ounces a day. Sodium bicarbonate is sometimes given in the dose of two drachms every three hours, if there is much evidence of acidosis, as indicated by strong acetone and diacetic reactions in the urine, or a strong acetone odor to the breath. It is stated, however, that in most cases this is not necessary and that there is no danger of producing coma by the starvation. If this is true it controverts the belief heretofore universally held by medical men, and until further evidence is adduced we prefer to remain on the side of caution by regarding suddenly induced starvation as dangerous. The patient is kept in bed and starved until the urine is sugar-free. It is stated that the disappearance of sugar is rapid. If there has been 5 or 6 per cent, after the first starvation day it goes down to 2 per cent, and on the third day the patient is sugar-free, or certainly by the end of the fourth day this occurs. It is claimed that there may be a slight loss of weight amounting, perhaps, to three or four pounds, and Allen goes so far as to say that a moderate loss of weight in most diabetics is to be desired. Here, again, we think that this statement is too dogmatic. It may be true of obese patients, but it certainly is not true of the emaciated ones, particularly if the patients are young. The question also arises as to how many patients are able to take nothing but alcohol with black coffee to the extent of 6 or 8 ounces a day with advantage. It may be true that the sedative effect of this amount of alcohol overcomes the nervous effect of large quantities of black coffee, but many diabetics suffer very intense nervous irritability, which is often emphasized by distressing pruritus, and we question whether this so-called diet would be tolerated, even if the liver and the stomach were able to deal with this amount of alcohol without distress. Certainly there are a very large number of persons who cannot take this amount of alcohol, even if it was diluted with a considerable quantity of food or drink, without inducing gastric and hepatic symptoms. When the patient is sugar-free he is allowed to get up and placed upon vegetables containing approximately 5 per cent of carbohydrate. These vegetables are thrice boiled with changes of water, so that their actual carbohydrate content is reduced probably one-half. A moderate amount of butter-fat is permitted. If the patient eats very heartily of green vegetables, even if they are thrice boiled, he may obtain more carbohydrate than his system can utilize. The typical dietary for the first day of feeding is as follows:

Breakfast.

String-beans, 4 heaping tablespoonfuls.
Asparagus, 4 heaping tablespoonfuls.
Tea or coffee.

Dinner.

Carrots, cooked, 2 heaping tablespoonfuls.
Spinach, cooked, 3 heaping tablespoonfuls.
Tea or coffee.

Supper.

Cucumbers, 12 slices.
Celery, 6 pieces about 6 inches long.
Tea or coffee.

In diet list No. 2 cabbage and onions are substituted for some of the vegetables

already named, and on the third and fourth day the variety of green vegetables is increased as to number and cream and butter added. The diet, day by day, becomes somewhat more generous, so that diet list No. 12 contains bacon, 2 slices 6 inches long, 1 egg, and 2 heaping tablespoonfuls of spinach, coffee, butter, and cream for breakfast.

Dinner.

Steak, one, very small.
Salt pork, 4 slices.
Cabbage, 3 heaping tablespoonfuls.
Onions, 3 heaping tablespoonfuls.
Butter, cream, and tea.

Supper.

1⅛ ounces of beef balls.
Celery salad, 2 tablespoonfuls; olive oil.
Tomatoes, 2½ tablespoonfuls.

In addition the patient is allowed during the day 2 ounces of butter and 10 tablespoonfuls of 40-per-cent cream. If, as the diet is gradually increased, sugar appears the diet is again cut down, and it is important to remember that the increase in the proteid elements of diet may increase the elimination of sugar.

We think that the average physician will find some difficulty in making his patients adhere to the rigid rules described above, but, for that matter, he usually finds it difficult to make his diabetic patients adhere to any rules. That Dr. Allen and his followers have been able to produce excellent results by this method is undeniable. That it can be applied in the sweeping manner which its description indicates we very much doubt. This plan of treatment savors too much of rigid routine applied in a disease which of all others lends itself but poorly to any absolutely hard and fast plan.

HOW DOES EMETINE ACT IN THE DESTRUCTION OF PARASITIC AMEBAE?

The fact that large doses of ipecac, if they can be retained in the stomach long enough to escape into the intestine, often exercise a specific influence in the treatment of certain forms of dysentery has been known to the medical profession for several generations, and long before any one suspected that dysentery was due to the presence of a parasite. In other words, we have here another interesting illustration of the fact that practical therapeutics is often far in advance of scientific investigation, and that clinical experience is often proved to be correct when science has advanced far enough to reveal the cause of a disease. The discovery of the entameba was the first step to prove that ipecac exercised its excellent effect by the destruction of this parasite, but it still remains to be determined as to the exact means by which this destruction is attained. The question naturally arises as to whether ipecac acts directly upon the parasite, or whether it induces, or produces, in the body some substance or condition which is unfavorable to its growth.

A very great advance in the treatment of dysentery of the amebic type was the discovery of Rogers that emetine hydrochloride, given hypodermically, failed to produce vomiting, as many people heretofore supposed it would do, and acted with greater efficiency than when crude ipecac itself was given by the mouth and without any of the disagreeable gastric effects of the crude drug. As in all other instances where the human body is infected by a parasite it holds true in this case also that where the parasite is deeply embedded in the tissues it is more difficult to destroy it by ipecac or emetine than where it is free in the alimentary canal, or exists in superficial ulcerations. One of the advantages of the hypodermic use of emetine is that through the circulation the drug can reach amebæ which would otherwise escape if ipecac were given by the mouth, but even when emetine is so used, amebæ which are deeply situated and surrounded by protective barriers of lymph, or half-organized tissue, naturally escape from the destructive influence of the drug.

In the *American Journal of the Medical Sciences* for July, 1915, Lyons published a paper of great interest in this connection. Taking up first of all the question as to whether ipecac given by the mouth can thoroughly permeate the intestinal contents, Lyons points out that we practically have

no knowledge as to how ipecac or its active principles are eliminated from the body, although, of course, it is a fair supposition that most of the ipecac escapes through the rectum. Lyons made an interesting experiment, taking the stools of previously infected patients who had been treated by ipecac, but whose stools had within a few days been free from this parasite, sterilizing the stools by heat, and then adding to them living amebæ. The result was that the parasites added were not affected, apparently proving that the stool did not contain ipecac, or its principles which are destructive to the parasite. The question remains as to whether the heating destroyed the active agent, or if the active agent had been absorbed from the intestine so that the stool contained none of it. The former proposition would seem to be correct, because, as Lyons says, other experiments have shown that amebæ which are exposed to emetine or ipecac after expulsion from the bowel are promptly destroyed.

Something may be said as to the dose of emetine which should be given and the length of time that the treatment should be continued. It will be recalled that in Roger's work he used comparatively small doses, his average being approximately ⅓ grain, and a cure in most of the cases being achieved after 2 grains had been used. Others have, however, given as much as from 2 to 4 grains per day by hypodermic injection. In all probability one grain a day is quite sufficient for the average case, although much variation in dosage, as in all other conditions of disease, must occur. Lyons states that he has yet to see a case that required more than 2 grains daily, provided the principle of repeated small injections was followed. In any event the injections should be continued for four or five days after the stools are negative when examined for the parasite. Lyons also thinks that very large doses of emetine continued over a long period of time may induce diarrhea, which may be attributed to the microörganism, when in reality it is due to the drug. He also thinks that during the administration of emetine the moderate administration of a saline is often beneficial, doubtless sweeping out of the intestine the parasites which have not been killed but only rendered inactive by the drug. Aside from the diarrhea induced when emetine is given hypodermically or by the mouth, Lyons states that mild peripheral neuritis may occur, and quotes Eshleman as reporting a case which developed a general eruption, purpuric in character, associated with severe peripheral neuritis. Other cases of peripheral neuritis are also on record.

Finally, summarizing his paper, Lyons believes that when ipecac and emetine are used they act through absorption into the blood stream and exert their specific effect on those parasites which are within reach of the circulation—that is, in the tissues. The parasites in the lumen of the gut are apparently not affected by either oral or subcutaneous use of these drugs. This is not a very important matter, because the free moving parasites which are not situated in the pathological lesions, while capable of doing harm, are not actively engaged in damaging the patient. Lyons also thinks that the oral administration of emetine is not advisable because of the intestinal irritation that it induces. If the patient is to be treated by drugs administered orally ipecac should be employed. To prevent relapse a course of hypodermic treatments should be given occasionally.

THE TREATMENT OF ENLARGED GLANDS IN THE NECK.

Older practitioners will remember that twenty-five or thirty years ago cervical glands were very commonly met with in children and in young adults, and many of the older generation at that time bore the scars which indicated that in earlier years they had suffered from lesions in these lymph nodes. At this time, before the clear relationship between infection and enlargement of these glands was thoroughly understood, they received comparatively little attention, so-called absorbent ointments being rubbed in over them, or if suppuration occurred the enlarged gland or glands were incised as would be an ordinary

abscess. A little later it became apparent that in a very considerable proportion of these cases these glands were enlarged as the result of tuberculosis, and with this discovery many surgeons insisted that the proper way to treat such cases was to cut down upon these glands and carefully dissect out the entire chain. As time went on it became increasingly evident that a goodly proportion of these cases were not tuberculous, but arose from some other infection of the tonsils, or about decayed teeth, and this discovery materially modified the view of those who had been most strenuous in advocating extirpation in all cases. Another step forward was reached when the profession recognized that in many of these instances complete excision and dissection of these glands was capable of resulting in much harm, in that it exposed the patient to a more or less rapid spread of tuberculous infection even if the glands which were not seriously diseased were excised along with their badly damaged fellows. At the present time the old dictum that these glands ought to be removed has been replaced by a good deal of caution in the operative method of dealing with them, and it is also fair to state that the internal use of drugs and the external use of ointments do not receive the credit which was at one time given. The only routine or standard method of treatment may be said to be the elimination of the primary focus of infection, and then the upbuilding of the patient's general vitality by an outdoor life, syrup of the iodide of iron and other tonics.

Our readers will recall that some time since we called attention to the fact that the sudden disappearance of marked swelling in the neck in these cases was not to be a subject of congratulation, but of alarm, as indicating that rupture of suppurating lymph nodes had occurred and that the pus was burrowing into adjacent tissues.

In the *Medical Record* of July 10, 1915, Meyer wrote an interesting article upon this subject, stating that in the Division of Child Hygiene of the Boston Board of Health for 1913 there were reported 13,711 cases of enlarged cervical glands among 118,781 schoolchildren, or about 12 per cent, which indicates the relative frequency of this condition amongst the lower and middle class chiefly. As Meyer points out, however, an important part of this report is the statement that all but 2 per cent of these cases subsided without operation. When suppuration is recognized as being present by fluctuation, the universal rule that pus should be evacuated holds true and the entire gland or glands should be incised. This was the practice thirty years ago. The abscess should be kept open and permitted to drain, and, if necessary, it may be packed with a small piece of iodoform gauze, swabbing out with tincture of iodine, and filled with bismuth paste or a 5-per-cent emulsion of iodoform in oil.

Considering the question as to how many of these cases of enlarged glands are tuberculous in nature, Meyer finds that most authors give from 30 to 60 per cent.

Meyer does not wish to be considered too conservative, but believes that something should be said against universal operation, although he recognizes that there are some instances of marked breaking down in which as radical an operation is to be performed as if the surgeon were dealing with a malignant growth. It is, however, important in these cases to search for the primary cause, as we have already intimated, and remove it.

HEMOTHORAX.

The term hemothorax to the surgeon implies an effusion of blood in the pleural cavity, usually incident to trauma, though the leakage or the burst of an aneurismal sac may cause a hemorrhage as extensive and even more rapidly fatal, whilst the serous effusion secondary to malignant involvement of the pleura is habitually blood-stained, even if it does not contain a large admixture of blood.

It should be remembered that the pleura encloses a potential cavity of such capacity as to allow of fatal bleeding; that the signs of hemothorax are those of hemorrhage plus a rapidly increasing effusion into the pleural sac.

The profession is divided in its opinion as to the advisability of operation or conservatism, unless the hemorrhage and pressure are so pronounced as to constitute an immediate danger to life. Bradford and Elliott *(British Journal of Surgery,* October, 1915) note that the two main questions which arise when a medical officer has to deal with a man who has been wounded in the chest are as to the danger of prolonged bleeding and sepsis. In the South African war, where the conservative methods of treatment were adopted, the infection of the hemothorax was a rarity, Makins stating that during the whole campaign he saw only a single case of primary empyema, and this was one which he attributed to infection introduced by an early operation for the removal of a bullet as it lay beneath the skin. Some secondary empyemata were supposed to have been caused by aspiration. It was the general belief at the time that aspiration was useless in addition to being dangerous. When the rib was resected for evacuation of the blood secondary infection was certain. It was then decided that chest wounds were best left to the natural processes of cure; and the cases recovered well.

The present campaign in Flanders has changed this teaching. Hemorrhage would appear to be and sepsis undoubtedly is a much more serious matter in the prognosis of chest wounds than it was in the South African campaign. Post-mortem examination was carried on in 84 bodies with chest wounds, in 69 of which there was a blood-effusion. Of these 46 died simply from hemothorax, the effusion being infected in 38 of this number, and death in every one of these having been caused by the infection. Simple hemorrhage was certainly the cause of death in only one man who died on the third day, and perhaps in seven others where the evidence was incomplete. Many of these 46 men succumbed within the first week of their injury.

From this it seems that death from simple hemorrhage is not to be feared if the patient has survived to the third day.

There were 328 cases of hemothorax seen during life; 211 were sterile, and 89 of these were so large as to need aspiration; 117 were septic. Death occurred in 47 cases, of which 36 were septic. Only in two deaths was simple hemorrhage the cause. Infection, therefore, was present in roughly one-third of the cases recorded, and the large effusions were just as often septic as sterile. Infection was found in 25 per cent, and the total mortality for all cases was 10 per cent; 70 per cent died from sepsis, 5 per cent from simple hemorrhage, and the rest from sundry complications. This death-rate applies only to hemothorax, and it represents the incidence in a group of base hospitals to which the severest cases tended to be sent. In the casualty clearing stations nearer the front an almost identical mortality of 10 per cent was recorded, but this is the death-rate of all wounds of the chest, and covers the mortality in the first few days after the wound. It may be presumed that simple hemorrhage, the chief cause of death on the field, also claimed a share of the 10 per cent who died near the front, and in the 10-per-cent mortality of the survivors who passed through the casualty stations and reached the base, hemorrhage was negligible and sepsis took its place as the chief danger to be feared.

The chance of infection has therefore to be considered in every case of hemothorax. It may develop as acutely as an infective peritonitis, and with almost as rapid a movement to a fatal end.

Hemoptysis cannot be relied upon as a token of the source of the hemothorax, for it may be merely a result of a bruise of the lung from an extrapleural wound; or on the other hand it may be absent in some cases in which the lung is wounded. The track of the missile through the lung rarely shows much laceration, but there is considerable infarction around it. The bleeding is in all probability fairly rapid, though not often so abundant as to cause faintness in the cases that survive it. The leakage soon comes to an end.

The material removed by aspiration from a sterile hemothorax at any time from the fourth day onward may be a brownish-red fluid, which yields a light gelatinous clot *in vitro* on standing, and contains lymphocytes

and endothelial cells; a deep-red fluid exactly like non-clotted blood, which throws down a very heavy deposit of ordinary red cells on standing, and may fail to give even the slightest of clot *in vitro;* masses of soft, blackish clot, like jelly, which soon block the needle.

It appears probable that clotting takes place always and very early through the action on the blood of the ferment liberated at the surface of the wounded tissues. The clot may be complete and massive, or massive with an early and extensive separation of the yellow serum, from which respiratory movements may whip out the fibrin in layers which cover the pleural surface, while the serum contains most of the red corpuscles in suspension as seen in defibrinated test-tubes. The pleura reacts to the presence of the blood by a mild inflammation. If a clot forms it tends to lie in masses at the back of the chest and along the paravertebral recess. The lung itself is collapsed by pressure where it dips into the hemothorax. Above this it is overdistended and emphysematous, so that the upper lobe may actually encroach across the middle line of the chest as the whole mediastinum is displaced laterally by the increase of intrapleural pressure due to the effusion. The largest effusions—from 70 to 90 ounces—usually cause complete collapse of the entire lung against its root. Subcutaneous emphysema is fairly common in the penetrating wounds. In the total series of cases only eight indubitable examples of pneumothorax were encountered. Only four cases of pneumothorax without hemothorax were seen.

As physical signs, there are impaired movements of the chest on the afflicted side. The area of stomachic resonance extends unusually high. There is an atonic condition of the diaphragm and the heart is displaced away from the effusion. The percussion note is dull and high-pitched over the effusion. Above this, over the emphysematous upper area of the lung, the note is often of a lower pitch and more tympanitic than over the corresponding area of the lung on the other side, this Skodaic resonance being at times exaggerated to a surprising degree. Subcutaneous emphysema may be felt on palpation, and it introduces a very tympanitic note on percussion which completely masks the condition of the deeper strata. Tactile fremitus is abolished over an area slightly less than that of the dulness on percussion. Breath sounds are weak, but sometimes tubular sounds from the collapsed lung within a hemothorax are so loud and clear as to suggest, quite wrongly, that the lung is close to the thoracic wall. Vocal resonance is always changed. The buzz is lost over the fluid, but there may be bronchophony and whispering pectoriloquy, while ægophony is frequently heard in areas which change from day to day.

At the moment of the wound the soldier often feels completely winded, and this distress is succeeded by a dyspnea which lasts for two or three days, or as long as there is a large effusion within the chest. Hemoptysis is fairly abundant. For the first few days the temperature goes up even to 104°. In the majority of cases it soon drops to nearly normal, or oscillates from 98° to 100° for the next week or two. The tongue is clean or lightly furred. The patient rarely shows blanching, though a faint icterus may appear at the end of the first week. Even the large effusions do not prevent the patient from breathing with fair ease in the recumbent posture. Sterile hemothorax may disable a patient by prolonged fever, by dyspnea, or by a progressive collapse of the chest wall on the affected side. Absorption is slow. Hence free fluid should be removed by aspiration in all cases of effusion which exceed 20 or 30 ounces—that is, roughly, those in which the dulness reaches half-way up the scapula. This results in prompt disappearance of fever, easier breathing, and the return of mobility of the chest in a few weeks. Out of 89 sterile effusions aspirated, an average of three pints in a volume, there was no evidence of later hemorrhage or of any gross reaccumulation of fluid; only in one instance did an empyema develop afterward. The seventh to tenth day is a convenient time to choose for aspiration provided the fresh hemoptysis has ceased.

There are no physical signs known which will serve to indicate whether the blood is congealed in a massive clot that will render aspiration fruitless, or whether the serum is satisfactorily separated. The massive clot is uncommon. The needle should be introduced well forward in the axilla at the anterior limit of the effusion, and high up on account of the elevated position of the diaphragm. The fluid should always be subject to bacteriological study. Too rapid withdrawal of the fluid often causes considerable distress of the patient from a violent fit of coughing. As soon as discomfort is noted oxygen should be introduced. By alternately aspirating the fluid and injecting oxygen, it is possible to empty a chest of all the fluid without causing pain. This oxygen is absorbed in the course of a fortnight. The simplest of apparatus without a manometer will suffice; and the gas is adequately sterilized by passage through a bacterial trap formed by three narrow loops on an open glass tube, the inner surface of which remains wet after boiling. Under ordinary careful asepsis the process for aspiration will never infect a hemothorax.

As to the septic cases, pneumococcus, micrococcus tetragenus, and bacillus influenzæ were found in about 20 per cent of the cases. The remainder had all been infected from the skin or from fragments of clothing carried in by the missile. These external infections fell into two main groups, those due to the streptococci, and those due to anaerobic gas-producing bacilli of fecal origin. The latter, either pure or mixed with cocci, were found in nearly half of the infected cases, and their presence is responsible for a very characteristic clinical picture.

The diagnosis of this infection depends entirely upon the result of exploratory puncture. The fever develops progressively, or is sustained at a steady high level, or exhibits widely irregular excursions of temperature. The pulse is rapid, but not invariably so; the dyspnea is out of proportion to the physical signs and increases instead of diminishing. There may be furred tongue, sleeplessness; mild delirium marks a grave and usually hopeless infection. There develop pain and tenderness in the side as the pleural inflammation develops. There is often vomiting and a contralateral dry pleurisy or a pericarditis. Indeed, every case of hemothorax in which the condition has not definitely improved by the fourth day after the wound should be regarded as probably infected. Fluid withdrawn by aspiration will give an extremely offensive odor, like that of rotten eggs or feces, which is invariably due to the presence of anaerobic gas-producing bacilli. The detection of organisms is accomplished either in a direct film or on culture. These may be found, though the fluid resembles perfectly sweet blood; and indeed the worst streptococcic cases generally yield in the early days a fluid of a rich red color, owing to extreme hemolysis of the red cells. In nearly 20 per cent of the gas-bacillus infection the bacteriological report on the first sample of fluid, removed on the fifth or sixth day, was that it was sterile. Not all these cases appear clinically to be septic, and a second exploration three or four days later found, as a rule, abundant infection.

As to treatment, early recognition of the infection is of vital importance. The chest should be opened as soon as infection is proven. This is particularly true when streptococcic, staphylococcic, influenzal, or anaerobic infection is present. Resection of a rib yields fairly good results. As far as traced all the patients recovered after this treatment. The more extensive operations for chronic empyema have not been required. In case of gross mixed infection with abundantly purulent effusion a large drainage tube should be inserted and the results awaited. After a few days the cavity can be flushed out with hydrogen peroxide and some weak antiseptic. Wright's hypertonic saline tablets proved a failure. The authors hold that the grave symptoms shown in these cases are not so much of a toxic as of a mechanical nature. Owing to the rapid development of gas the patient rarely if ever exhibits the thready pulse, waxy yellow face, low temperature, and repeated vomiting which are seen in poisoning when a limb is the seat of severe

gas gangrene, and which almost invariably presage death. Staphylococcic infections also do well. Worst of all are the acute streptococcic cases.

This study is based on a large and recent experience. The authors say nothing of the immediate treatment of chest wounds, the checking of bleeding, which of course consists in the administration of morphine to quiet the patient, the strapping of the chest to put the region of injury at rest, the administration of serum to increase the coagulability of the blood and lessen the bleeding, and careful examination for the purpose of estimating at least roughly the source of the bleeding, and if possible getting at it and stopping it. Their figures are of interest as showing how rarely wound of the chest is fatal unless it be so almost immediately. The suggestion to aspirate for the relief of pressure seems entirely logical. Whether or not the teaching be sound the clinical experience is incontrovertible, and the deductions which are drawn from it are worthy at least of careful consideration.

CEREBROSPINAL FEVER.

Because of its comparative rarity little is generally known of infections classed under this title, either as to the origin and nature of the infection, its localization, its transmission, its prognosis, or finally its treatment. Benians *(The Practitioner,* November, 1915) notes that Weichselbaum identified the meningococcus of the now familiar type in 1887. He isolated this organism in some half-dozen sporadic cases, which were not associated with an epidemic of the disease; but continuing his researches for the next eight years he entirely failed to isolate this organism again. In 1895 the diplococcus Crassus was found presenting some characteristics similar to those of the meningococcus, not the least important of which is its capacity for appearing in the meningeal system from time to time. Gram-negative cocci have been obtained from the meninges, but showing marked cultural and morphological variations from the meningococcus of Weichselbaum, as well as cocci morphologically similar to the meningococcus, but differing in their reaction on sugar-containing media, and in their reaction toward Gram's stain, to which some of the cocci gave a positive and some a negative reaction. In addition to this, the presence of Gram-negative bacilli, bearing no clear relation to the coli-typhoid group of organisms, has very frequently been observed. And, finally, it must be added that it is by no means uncommon for a careful examination, both by films and cultures, to fail in demonstrating either the meningococcus or any other organism in the purulent cerebrospinal fluid; and this, too, in a characteristic case of meningitis occurring in an epidemic, when meningococci may be present in the pharynx.

None the less the meningococcus of Weichselbaum is usually recognized as the cause of cerebrospinal fever, anything else obtained from cultures being discarded as irrelevant. There is undoubtedly a fairly constant association of the meningococcus in the disease. The meningococcus for culture must be kept moist, warm, and must be planted in a richly albuminous medium. In cultures it varies markedly in size, large giant forms being fairly constant. All forms are Gram-negative. It survives but a very short time in artificial media. The effect of organisms on laboratory animals is slight and relatively inconstant so far as toxic action is concerned. Moreover, in order to cause meningitis, it is necessary that the organism should be artificially introduced into the meninges. It then causes an acute inflammation. It is true that most organisms act in the same way.

Benians recognizes three types of symptoms incident to a meningococcus infection: The catarrhal type, in which there is a localized infection of the pharynx; the septicemic type, in which there is usually a generalized infection of the body through the blood; the meningitic type, in which there is a specialized infection of the meningeal system.

In the catarrhal form there is usually a definite acute pharyngitis of a dry type —in the first instance of a streptococcic

infection, though subsequently the meningococcus is found in great numbers, especially in the nasopharynx adjacent to the sphenoidal air sinuses. The catarrhal type usually clears up promptly, excepting it goes into another type. Exceptionally it persists in a chronic form and the patient becomes a carrier.

The septicemic type is almost always preceded by the local pharyngeal infection. There is often erythematous rash or herpes facialis.

In the meningitic type the symptoms in the diffuse cases are those of a diffuse cerebrospinal meningitis, but in chronic cases principally those of a posterior basic infection. It is accepted that if a person who has been exposed to infection is not at the end of a fortnight harboring the meningococcus in his throat, he may be regarded as safe.

The meningococcus can as a rule be isolated from the throat in the early days of the acute disease. This is usually not possible by the end of the third week. Hence throat examinations are a tolerably safe means of diagnosis in early cases and in conditions in which lumbar puncture is not indicated. Apparently healthy persons who have been in contact with the disease from whose throats the meningococcus has been isolated may become carriers. The percentage of carriers has varied in different epidemics from 2 up to 40 per cent of those brought in contact with the patient. The carriers are regarded as temporary, periodic, and permanent. The temporary are those in which the infection persists for only a few weeks. In the permanent carriers the organisms may be present in the pharynx in great numbers for many months despite energetic and continuous efforts to eradicate them. In an epidemic there is a rising virulence, so each succeeding cerebrospinal fever patient is found to be associated with an increasingly large number of carriers. The virulence of the organism increases in its passage from victim to victim, and the organism acquires at the same time the power of implanting itself more readily in the mucosa of the normal individual's throat. It is rare for a known established carrier to become affected with acute cerebrospinal fever, due doubtless to the immunity set up during the course of infection. Moreover, there is a general belief that the primary contact, by which is meant the person in direct contact with the cerebrospinal fever patient, is rarely attacked by the disease. On the other hand, it is said to be the secondary contact—that is, the one coming in contact with the carrier—who is liable to become affected with the acute disease. This is an impression rather than a matter of fact established by careful statistical study. Examination of the citrated blood in a few cases has demonstrated the presence of typical meningococci. Moreover, they remain there for but a short period, and in a large number of clinically acute septicemic cases their presence cannot be demonstrated at all.

Various bacteria have been obtained from the cerebrospinal fluid. The important one is the meningococcus of Weichselbaum. They may be very abundant or found with great difficulty, or found not at all. They are more constantly found in the first tappings and tend to disappear later on. They readily undergo autolysis, this being the explanation of the fact that only a very few may be found in cases of pronounced purulent meningitis.

As to the transmission of the disease, starting with the assumption that an entrance is effected by means of the mucosa of the pharynx, though it is possible that the route may be direct incident to obstruction of the sphenoidal air sinus, it is more commonly carried by the blood. The filtering mechanism that separates the vascular system from the meningeal system is so fine that even the large albuminous molecules in the blood-plasma cannot pass across to the cerebrospinal fluid. Hence it is difficult to account for the passage into the thecal space of the meningococcus, which is a fairly large organism. Hort suggests that the meningococcus may exist in other forms than that in which we know it, and that in some one of its forms it may be sufficiently minute to pass through the filter. The examination of the cerebrospinal

fluid in acute meningitis shows the presence of a large amount of albuminous matter which steadily diminishes as the disease passes to a favorable termination. The number of organisms found at the first examination is no guide as to the severity of the attack. Polymorphonuclear leucocytosis indicates an acute inflammation. It subsides, the cells diminish, and there is a corresponding increase in the number of lymphocytes, this being regarded as a favorable sign.

The best means of treatment is the immediate and repeated injection into the spinal theca of a reliable antimeningococcal serum, following the withdrawal of a considerable amount of the excessive fluid through the cannula. The diminution in the number of bacteria, together with a lessening of the amount of albuminous substance, and an alteration in the type of cell present, will probably be found to have taken place within a few days.

The antimeningococcal serum has both antitoxic and antibacterial properties, and is usually standardized by an estimation of its phagocytic properties. The favorable action of the serum is not constant, and in some refractory cases, as for instance where an organism slightly different from the meningococcus, and known as the paramen-ingococcus, has been isolated, the administration of an autogenous serum has resulted in a cure.

Meningococcal vaccines alone are not indicated since there seems to be little necessity for the production of antibodies of the opsonic type, as well as because antibodies, produced in the tissues and circulating in the blood, have but very little chance of ever getting into the meningeal sac.

Benians suggests that an autogenous vaccine might be administered and that the patient's serum containing his own antibodies could subsequently be transferred to the spinal theca.

Cerebrospinal fever as observed clinically usually begins with headache, chill and vomiting, stiff neck with a retraction of the head, photophobia, and often strabismus. Spasm may or may not be present. Early delirium is usually followed by coma. Herpes and skin rash are common. There is a marked leucocytosis. Most of the fatal cases die in the first week. Convalescence is extremely slow and often complicated. As to the diagnostic signs aside from the Kernig, which should always be positive, lumbar puncture is the one on which reliance is placed. The death-rate in children varies greatly with different epidemics. The Flexner serum being a specific should be used only when the meningococcus is found; serum injections are repeated daily. For the meningitis due to other bacterial infections, if that incident to the bacillus of influenza be excepted, there is no specific serum, nor attempt at its preparation. Hence lumbar puncture repeated in accordance with pressure symptoms would seem to be indicated. The failure of this measure to relieve the symptoms and to cure is probably due to a half-hearted apprehension of a broad surgical principle—*i.e.*, always drain pus under tension.

REPORTS ON THERAPEUTIC PROGRESS.

HYPODERMIC INJECTIONS OF OXYGEN GAS IN THERAPEUTICS.

The *British Medical Journal* of June 5, 1915, reminds us that hypodermic injections of oxygen gas were used therapeutically for the first time in the year 1900 by Ewart and Domine, independently of each other. Soon afterwards Chabas and Domine obtained good results in certain infectious diseases. With the publication of F. Ramond's work began a series of clinical studies on the subject. Béraud's experimental and clinical work showed that hypodermic injections of oxygen enable animals to resist asphyxia better than animals not so treated; that they controlled carbon monoxide poisoning, stimulated cell activity, acted as antitoxic and anti-infectious agents, slowed the pulse, usually lowered temperature in fever, diminished cyanosis, led to euphoria and diuresis, and in chest affections rendered expectoration easier and more abundant. It appears from the extensive experience of these two writers, and numerous others, that hypodermic injections of oxygen have proved either very beneficial or curative in the following conditions: Toxic dyspneas—for example, uremia, with or without bronchitis or pulmonary edema, diabetic coma, the pulmonary complications of diabetes; in mechanical dyspneas of the respiratory tract as a useful adjuvant treatment; in asthma and the asthmatic dyspnea of aortic disease; in poisoning by carbon monoxide and dioxide, deleterious gases, and vapors of ether or chloroform; bronchitis, emphysema, bronchopneumonia, either lobular or lobar; massive pneumonia, empyema, pulmonary tuberculosis, both in early slight and later severe cases; pertussis, acute endocarditis (one case), typhoid fever; edema of the glottis or lungs, marked dyspnea with defective oxygenation as in cardiac and renal disease, asphyxia neonatorum, syncope, and electrocution.

Ramond successfully treated by this means two cases of Raynaud's local asphyxia. Dumarest used it in early gangrene of the foot due to arteritis, and found it very useful in a large number of cases of "frost-bite" in the war. Toulouse and Puillet record rapid cure in four cases of acute psychoses of the confusional type; marked mental improvement began on the first day of treatment, confusion and agitation giving place to lucidity and calm, with improved sleep and euphoria. Dardel records great benefit in nervous and mental disorders: sleep improved and became deep and natural; euphoria was constant; benefit occurred even in organic cerebral disease. His cases comprise neurasthenia, epilepsy, constitutional psychopathy with chronic depression, ideas of persecution with violent attacks of anger, circular insanity, chronic gastritis with obstinate insomnia, and catatonic dementia with remissions. Léger tried this therapy in three cases of tetanus, two of which were very severe, and seemed absolutely hopeless; they all recovered.

Dr. Howitt and Mr. Jones have reported in the *Canadian Medical Association Journal* (1914) the beneficial results from the subcutaneous injection of oxygen in the dyspnea of tuberculosis, in gas poisoning, pneumonia, edema of the lungs, bronchial asthma, and after operations. In making experiments with regard to tetanus a fresh culture of B. tetani was obtained from Parke, Davis & Company, and subcultures made from this in dextrose beef extract bouillon and dextrose beef extract agar, incubated under anaerobic conditions at 37° C. for three days, and kept later at room temperature. The cultures were shown to be virulent by inoculation experiments on a guinea-pig.

In the experiments oxygen was injected into the subcutaneous tissue through an aspirating needle fitted with a long rubber tube connected with the source of supply. In the first series of experiments four guinea-pigs were inoculated with B. tetani, and in the case of two sufficient oxygen was given to produce emphysema over an area 3 to 5 cm. in diameter in the surrounding parts. In the two control animals,

symptoms of tetanus were observed after thirty to thirty-six hours, and death occurred after forty-six and seventy-two hours. Of the two treated with oxygen one survived. In the other tetanic symptoms were observed after forty-four hours, and death occurred after eighty-four. In this series of experiments an eight-day bouillon culture was injected on the inner side of the right thigh.

In the second series agar plate cultures were used. The skin was punctured with a sterile instrument, and a platinum needle drawn through the surface growth of the culture was then inserted into the wound. In the two control animals symptoms of tetanus were observed in thirty-six and thirty-eight hours, and death occurred in fifty and sixty-six hours. In the animals treated by injection of oxygen after inoculation, symptoms of tetanus developed in one animal in fifty-one hours and in the other in ninety. The former died after seventy-two hours; the other seemed to be recovering apparently eight days after inoculation.

The authors consider that though the experiments are limited they justify the use of oxygen in tetanus in the manner indicated.

The earlier observers, and some of the later also, used a simple apparatus consisting merely of a rubber tube connected with an oxygen bag or cylinder and a Pravaz syringe; this apparatus has often worked well, but the method is not accurate. Ramond (1911) interposed the rubber ball of a thermocautery between the oxygen balloon and the needle; it allowed quicker injection, so that three liters of gas could be easily and safely injected within the space of a few minutes (! Ed.). Derose gives a description of a simple but satisfactory arrangement invented by Sapelier. The special "oxygenator" of Bayeux is praised by Brelet as portable and very accurate; the gas can be injected either slowly or quickly. A description of Martinet's oxygenator is given by Dardel. The rate of injection varies according to the nature of the case. As a general rule, urgent dyspneic conditions need fairly quick injection, but never so violent as to produce any marked pain. In chronic disorders, however, slow injection is desirable. Thus Gouget advises that each injection should take from five to twenty minutes, but never more than thirty. Dardel urges that the patient should lie down for at least half an hour after injection whenever possible. Some slight pain on pressure may be felt over the site of injection for several days, and pricking sensations are common. The swelling produced by the injection may reach within a minute to half the size of a football, and the subcutaneous crepitation may be felt digitally and heard on auscultation for one to three days.

The site of injection may be the interscapular region, outer part of thigh or abdomen, buttock, lumbar region, outer thigh, or outer abdomen. Injection near the thorax should be avoided, because it is hampering to auscultation by the subcutaneous emphysema that follows; and Gouget says that the emphysema produced, if the injection be made in the back, may spread to the neck or mediastinum, and so cause pain or respiratory embarrassment. Light massage favors the diffusion and absorption of the oxygen; sometimes the skin becomes rosy during injection and shows local hyperthermia. Ramond says that "a few Cc." are enough for a case of Raynaud's disease; but for a general asphyxia he uses two or three liters at each sitting, repeated several times daily according to the needs of the case. In pulmonary tuberculosis Bayeux seldom gives more than half a liter a day; in milder cases one injection in three days, in graver one daily (up to a liter), but always slowly. In nervous and mental cases Dardel used Ramond's minimum doses (300 to 500 Cc.).

The method is free from risk, and has never produced any bad effects. Probably the reason why oxygen has been so little used by hypodermic injection outside France and Switzerland is that gaseous embolism has been feared, but it has never been known to occur either in man or animals.

In conclusion, there are many diseases, accidents, and cases of poisoning in which the hypodermic injection of oxygen seems worthy of trial, such as apparent death by drowning, lightning stroke, all acute poisons that kill by asphyxia or coma; many acute exanthemata, especially early in their course; croupous pneumonia as soon as the diagnosis is made, for at this early stage the oxygen-combining power of the blood is probably but little diminished; anthrax, glanders, malignant diphtheria and septicemia, and snake-bite. It may also prove worthy of a place in the treatment of chronic diseases such as chlorosis and the incoercible vomiting of pregnancy, for inhalation of oxygen is sometimes beneficial in both these conditions. And it may yet find a place as an adjuvant in the treatment of pernicious anemia, marasmus in children, various visceral diseases, chronic alcoholism, syphilis and its sequelæ, subacute combined degeneration of the spinal cord, tabes, disseminated sclerosis, syringomyelia, and status epilepticus. [We doubt if oxygen gas possesses half of the powers here ascribed to it.—ED.]

EHRLICH'S RECENT MODIFICATION OF SALVARSAN.

The *British Medical Journal* of June 5, 1915, tells us that Professor Wechselmann of the Rudolf-Virchow Hospital in Berlin and Dr. G. L. Dreyfus of Frankfurt have recently published their experiences of sodium-salvarsan (salvarsan-natrium).

After discussing the defects of the original salvarsan and of the more soluble neosalvarsan, Wechselmann stated that he was provided a year and a half ago by Ehrlich with a new salvarsan preparation, 12,000 injections of which he had since given. He found it satisfactory in every respect, as it combined the advantages of the two earlier preparations with none of their failings. At first two preparations were tested, the only difference between them being the presence of "hyraldit" in the one. The other, No. 1206 A, had the same action as the first preparation, the chemical and physical properties of which were inferior. Ehrlich accordingly decided to introduce only No. 1206 A under the title of "salvarsan-natrium." This was a fine golden-yellow powder, which was easily soluble in water, and which on exposure to air acquired a dark-brown color, became almost insoluble, and increased toxicity. It contained the same proportion of arsenic, 20 per cent, as neosalvarsan, and the dosage was accordingly the same.

For more than a year the dosage of sodium-salvarsan ranged from 0.3 to 0.45 gramme. Later the dose was occasionally raised from 0.6 to 1 gramme, and though these larger doses caused but little discomfort, the smaller doses of 0.3 to 0.45 gramme were preferred for ambulatory treatment. In these quantities the drug was found to be absolutely atoxic, and the injections were not followed by the slightest reaction as a rule. After the first injection in florid syphilis the only reaction was an occasional slight rise of temperature, which was unaccompanied by any discomfort. Only in four cases did slight vasomotor phenomena, suggestive of anaphylaxis, occur; but two cases within a week showed a measly rash, and the preparation was accordingly considered unsuitable for subcutaneous injection. This method of administration was also contraindicated by occasional slight necrosis at the site of injection, due rather to the alkaline constituent of the preparation than to the salvarsan element in it. Being practically atoxic, the preparation could be given in cases of apoplexy, diabetes, and other diseases, including nephritis, so long as the functional activity of the kidneys was not much reduced.

Albuminuria was never provoked by the injections, nor increased in cases in which it already existed. From forty to fifty injections were given in each case over a considerable period, two or three injections being given every week. It was hoped that equally good results would be obtained by increasing the dosage and decreasing the number of injections. In early cases a total dose 4 to 6 grammes was sufficient,

practically without exception, to banish all the clinical signs, and in about 93 per cent to render Wassermann's and other syphilitic reactions negative. In cases of old standing the clinical results were also good, but Wassermann's reaction sometimes remained positive for a considerable period. As concentrated solutions were apt to cause not a little discomfort and vomiting, a dilution of 0.1 sodium-salvarsan to 10 of a 0.4-per-cent saline solution was usually given and found satisfactory. Though the drug was given by subcutaneous and intramuscular injections in some cases, it appears that the intravenous method of administration was generally preferred.

The account given by Dr. Dreyfus of sodium-salvarsan was also very favorable. He pointed out that sodium-salvarsan was chemically the same substance as old salvarsan when this had been rendered alkaline immediately before injection. In other words, it was old salvarsan modified so as to be as easily given as neosalvarsan. So atoxic was this preparation that in a series of 138 injections there was no rise of temperature above 37° C., and no subjective reaction. In a short editorial note, the *Münchener medizinische Wochenschrift* expresses the hope that, by this advance in salvarsan therapy, the ambulatory treatment of syphilis among soldiers on active service will be greatly facilitated. At present it appears that the difficulties of preparing and injecting solutions of salvarsan are a great hindrance to ambulatory treatment in the field.

THE PREVENTIVE TREATMENT OF CATARRHAL DEAFNESS.

YEARSLEY in the *Practitioner* for June, 1915, says the general line of treatment which seems to be adopted when a patient presents himself with early middle-ear catarrh is to have recourse at once to inflation by catheter or Politzer bag, and, so far as the nose is concerned, to be content with prescribing a nasal douche, a spray, or a snuff, with, perhaps, the addition of an occasional application of the galvanocautery to the turbinates. If the case is in an early stage, or has not yet progressed very far, the result is good. It is, however, good only for a time; relapse comes presently, and more inflation, more nasal douching, more cautery are tried, probably with less success. Relapse occurs in nine cases out of ten, for the cause has not been treated adequately. Often then only is serious correction of nasal abnormality attempted—when it is too late. Perhaps more enterprise is shown by direct local treatment of the nasopharynx, but unless the cause of the nasopharyngeal condition is carefully sought out and treated, ultimate failure is inevitable.

The proper course to pursue in dealing with these cases is: first, to make a complete physical and functional examination of the ear, so that its exact condition as regards tympanum, Eustachian tube, and hearing is recognized; secondly, to examine the nasopharynx and nasal cavities to ascertain their condition and causative relation to the affected ear or ears; and thirdly, to adapt treatment judiciously to the individual case, always bearing in mind that the removal of the cause is of paramount importance. A few words upon each of these three heads are necessary.

In examining the ear, the condition of the membrana tympani and of the Eustachian tube must be ascertained, but the results of functional testing by whispered and spoken speech and by tuning-forks are of equal if not of greater importance. Speech is the most useful test, not only from the point of view of prognosis, but for ascertaining the progress of the case during treatment. The writer's own experience goes to show that, so long as any whisper-hearing remains, the prognosis is encouraging, being better in direct proportion to the amount retained. As regards tuning-fork tests, if Rinne's reaction is negative only for low forks, especially if the disproportion between bone and air conduction is not very marked, prognosis is not bad. Another point in prognosis is the amount of loss of hearing by air for low tones. The smaller the reduction in low-tone hear-

ing, the better the prognosis. When the loss is up to and including the C 128 fork, Rinne is markedly negative or negative for both high and low forks (C 128 and C 512 are the best to use), and when the whisper can no longer be distinguished, prognosis is bad. The writer ignores, here, the presence or absence of paracusis Willisii, for he is speaking rather of the early stages of catarrhal middle-ear deafness. Moreover, the presence of this symptom means that both ears are seriously involved.

The second point concerns the examination of the nose and nasopharynx. The former should be inspected by anterior rhinoscopy, both without and with the use of cocaine and adrenalin. In no case should the routine examination of the nasal cavities under cocaine be omitted. It is sufficient gently to pass a wool-armed probe, dipped in a solution of equal parts of 10-per-cent cocaine and 1-in-1000 adrenalin, over the mucous membrane of the anterior half of each nasal chamber. This is more efficient and less haphazard than the use of the spray. By this means sufficient ischemia, without inconvenience to the patient, is obtained to insure a full inspection of any abnormality of the septum present, and by it alone can the existence of a posterior bony spur be detected in many cases.

The nasopharynx can be examined by means of the posterior rhinoscopic mirror or by an electric nasopharyngoscope. It is better to use the former instrument before the nose is placed under cocaine, for the condition of the posterior ends of the inferior turbinates and of the Eustachian cushions can better be ascertained. For the electric nasopharyngoscope, it is usually necessary to cocainize the lower part of the septum. The instrument the writer prefers to employ is that of Holmes, which is passed like a Eustachian catheter and can be used from one side. This reveals well the condition of the postnasal space, and by its means adhesions or growths in the ostium of the tube can be accurately observed.

Having ascertained with as much detail as possible the exact condition of the patient, including his general state of health, and especially that of his digestive and circulatory organs, then and then only can the question of treatment be considered. When the case is in an early stage and the prognosis is favorable, there can be no other course open than to remove the cause. There can and must be no half measures. When a well-marked spur or deflection is present, the use of nasal douching, sprays, snuffs, or the application of the cautery to the turbinates is merely playing with the case, and will lead eventually to disaster.

CONCERNING SPARTEINE SULPHATE BASED ON USE IN 305 CASES.

In the *Denver Medical Times* for June, 1915, EARP comes forward as a champion of a drug which some have thought valueless. He believes that sparteine seems capable of acting as a heart tonic without causing any untoward effects such as are witnessed in the use of some other agents, and more heart force and less frequency are recognized after sparteine has been used. Whether given hypodermically or per os it is evident that its physiological action is obtained by the larger doses, such as one to two and one-half grains. The small doses are worthless. No doubt those who have used the fractional doses have met with negative results. While it produces favorable action as an unirritating diuretic, yet the writer does not particularly advocate its use when such a remedy is called for—that is to say, if it is simply a diuretic that is needed and nothing more. In certain nephritic conditions sparteine may be indicated at times when one hesitates to use those of another group. The writer cannot now go into the details of blood-pressure to furnish further evidence of its adaptability.

Concerning therapy and pathology there has been much for physicians to unlearn during the past few years. Interpretations have often been based upon false premises, and on the other hand careful investigation of a scientific character has placed a rational foundation under many things for a time empirical. It is now known that

many cases of both nephritis and arteriosclerosis have a normal blood-pressure and below it, and Janowski has shown that while increased blood-pressure is a valuable symptom in arteriosclerosis, yet the serious cases are those in which there is a low blood-pressure because these have an impairment of nutrition of the myocardium and it is impossible to maintain a high blood-pressure. It is for this reason that we find in the long-standing cases of endocarditis, when the nutrition of the heart muscle is at low ebb, there is a weakening of this structure and necessarily a disturbance of compensation results. This is the ultimate outcome of nearly, if not all, cases of chronic endocarditis. The writer knows that in many cases sparteine can render aid. In November of last year the *Medical Record* editorially called attention to some things in which the past few years had wrought a change in opinion. In chronic nephritis there are two groups, in one of which the blood-pressure is normal, and in the other it is heightened.

The observation of Janowski together with the results of certain functional tests indicates that the old classification of the parenchymatous, the interstitial, and the mixed types of nephritis is no longer in accord with clinical facts.

Petty (*New York Medical Journal,* April 3, 1913) has shown by experiments upon human beings with every possible aid of mechanical invention, with accurate records, that sparteine not only does not depress the heart muscle of a human being, but on the contrary it acts as a positive and powerful tonic to it. This series of experiments were made as a refutation to certain conclusions of Wiggs, who had made deductions based upon animal experimentation and published in the *Old Dominion Journal of Medicine and Surgery,* May, 1914. The writer called attention in the *Indianapolis Medical Journal* for April, 1914, to some of the fallacious conclusions respecting digitalis which were based upon the results of animal experimentation. Lawrence in the *Boston Medical and Surgical Journal* made certain deductions from information obtained from the Massachusetts General Hospital, two of which are that "the effects of various drugs on the blood-pressure as determined on animals do not furnish reliable criteria for the administration of such drugs to man, since the effect may be quite different in the latter." The pressure-raising effect of digitalis noted in animals and in healthy individuals does not occur, as a rule, when the drug is administered to individuals suffering from cardiac decompensation.

While digitalis is frequently compared with sparteine it has an avenue of usefulness in part a departure from that of sparteine, and it is not germane to speak of one as a substitute for the other, nor is it necessary to favor one to the exclusion of the other. To take this position shows a lack of working acquaintance with either drug. With our present knowledge of therapy we cannot argue in favor of sparteine as against digitalis with a view that digitalis always raises the blood-pressure. We have only to call to mind the clinically proved statement of Janeway in the *New York Medical Journal* of May 23—that the dangerous increase of blood-pressure from digitalis as used in human beings is a superstition without any basis of clinical fact. The clinical application of this newer conception of digitalis was recently revised by Martinet (*La Presse Médicale*), who not only confirmed the observations of others, but found that injudiciously employed it could be used in a large proportion of cases to lower the blood-pressure.

Petty has made plain that sparteine should not be classed with digitalis or that it has similar effects upon the circulatory system.

While sparteine exerts equally as tonic an effect on the heart muscle as digitalis, its influence on the arterial system, especially on the arterial capillaries, is directly the reverse, digitalis being a vasoconstrictor and sparteine a vasodilator. By dilating the arterial capillaries it reduces the resistance against which the heart is called upon to propel the blood. It may be thus seen why it prevents myocardial and general exhaustion, favors heart nutrition and the increase of heart-tone. It has the advantage of acting quickly and is practically non-toxic.

PRURITUS.

In the *New York Medical Journal* of September 4, 1915, CUNNINGHAM points out that remedies for itching are frequently entirely different from remedies for the disease that causes the itching. Very often they will not cure the disease; but the cure of the disease will naturally cure the itching. The writer is often put to it to devise ways and means to check the itching while he is attempting the slower process of removing the cause. The method adopted will vary with the character of the provocation.

In senile pruritus he is confronted with a cause that cannot be removed. Palliation is the only resource, and it is for the most part utterly unsatisfactory. The skin is dry and keratotic. This nutritional disturbance is reflected in the terminal nerves. It is universal, although it may be especially distressing in hypersensitive locations. Against this implacable embitterer of the evening of life all the legions of antipruritics have been flung in vain—a fair test of the actual worth of any of them in the face of an ineradicable cause. So insignificant are their effects that we are forced to resort to nerve benumbing agents administered by mouth. Even the full relief from these is frequently denied us because the patients are at the time of life when such drugs are badly borne. Cannabis indica, gelsemium, and the coal-tar preparations are employed with extreme caution. Their danger "makes us rather bear those ills we have than fly to others that we know not of."

An acute eczema would naturally be managed in a different manner from a chronic eczema; an urticaria from a dermatitis herpetiformis; a lichen from a spinal reflex. It will not do to slap carbolic acid on the lot and let it go at that. Nowhere in the whole range of applied therapeutics is it more clearly shown that "one man's meat is another man's poison" than in the application of remedies to the skin. A dry skin will call for different measures from an oozing one, a thickened skin from a thinned one, a hyperesthetic skin from one of normal sensibility, the skin of the normally constructed individual from that of the fussy, fidgety introspective *ego ipse* hypochondriac.

Some of these separated considerations naturally and necessarily overlap. Some reference has already been made to remedies. The sovereign remedy in every pathological condition is the removal of the cause. The remedy for the inflammation from a foreign body in the eye is not an eye-wash, but the extraction of the foreign body. The remedy for the pain of a fractured leg is the realignment of the fragments that are poked into the surrounding tissues. The remedy for an itching dermatosis is the cure of the dermatosis. This is practicable sometimes, as in urticaria where an active cathartic eliminates the toxins from the intestinal tract; as in trade eczema when the patient can be made to stop the handling of irritating materials; as in lichen planus where the bold administration of bichloride of mercury will speedily influence the eruption. Where for physical or economic reasons the cause is irremovable, palliation must be attempted. There are such causes. Senility is one. Organic disease of the liver exciting pruritus ani is another. The fact that a man must eat even if he itches is another. Men cannot forsake their accustomed toil at will even to escape this evil. The dyer must dye, for it is the only way he has of living. When after a consideration of all the circumstances, we are driven to the necessity of attacking the symptom irrespective of its origin, what shall be the order of our going? First disabuse the mind of all illusions regarding the potentiality of all the warmly advocated antipruritics. Do not be unbalanced by a name, either of a man or of his remedy. Think out the individual case before one and attack it on a common-sense basis. It is true that one must be guided in some degree by the experience of others, as life is too short to learn everything at first hand. But one can digest the evidence they adduce; one can analyze it and try it by the fire of his own intelligence. If so many different things control itching on some occasions and fail utterly on others, the

rational inference is that (the testimony of the witnesses being unimpeachable) there must be some point of divergence between the methods making for and against success. This brings the writer to the last item in his summary.

We are agreed that the patient has been carefully studied with regard to his peculiarities, the character of his ailment, and the feasibility of removing the exciting cause, and that we are compelled to resort to the antipruritics in order to accord him a measure of relief. How shall we employ the agents that we may select? It is safe to say that if carbolic acid frequently fails, its actual antipruritic value must be low. Its success must be attributed to the combinations in which it is made up, and the thoroughness with which these are applied. These combinations are mull, pastes, salves, powders, and heavy lotions. Thoroughly applied, these afford protection from air, moisture, and accidental contacts. That is the secret of success in treating pruritus. That is the explanation of the success of so many different agents in the hands of so many different investigators. It is probable that any non-irritating substance carefully applied would have yielded the same results. The odoriferous element gets the credit, but it was the liberal use of the protecting mass that actually achieved the result. This too explains why hospital cases do better than private cases, and why private patients who are followed up do better than dispensary patients who use their remedies in a slipshod, careless, and incomplete manner. How often has the writer seen plain olive oil afford relief unobtainable by more elaborate medication! How dependable has he found compound wool-fat ointment, made up of nothing but boroglycerin, wool-fat, and petrolatum! How surprising has been the response to stearate of zinc, which gives an unctuous coating to the supersensitive skin and excludes air, moisture, and friction! A trial may be made of any of the so-called active agents high in favor among dermatologists, and it will be speedily ascertained that, the menstruum being liberally applied, the results will be entirely different from those of a meager application. And this will not be because more of the active agent is used (for the proportion remains the same in an ounce or a ton), but because one protects the parts with a bland buffer.

The action of lotions would seem, at first glance, to controvert the position assumed above. They are moist and do not exclude the air and do not protect the part to any great degree. Granted! But they act on the principle of refrigeration when they are clear, and upon the principle of refrigeration and the deposition of a protecting powder when they are heavy. Calamine and zinc lotion leaves an evenly distributed bland powder over the surface after the rose-water evaporates. The English augment the effectiveness of this formula by adding oil and styling it calamine and zinc liniment. It is a matter of nice discrimination when the lotion or the powder or the salve is most advantageous. If it cannot be determined in advance, it can be by a little careful experimentation. But always should it be remembered that the application must be generous.

THE TREATMENT OF ARTHRITIS.

SEABORN in the *Canadian Practitioner and Review* for September, 1915, believes that it is now well recognized that the focus of chronic suppuration must be removed. The tonsils, teeth, nasal fossæ, appendix, or prostate often contain this focus. In many cases, after most diligent search has been made to locate the focus and when the serum from the joint is negative, we may still find the offending organism by removing under most strict asepsis the lymphatic gland nearest to the joint, macerating it, and making a culture of the contained organisms. Then vaccines may be prepared and that used which gives the most characteristic reaction.

In two cases in which this was done the improvement was very great. In both staphylococcic and streptococcic vaccine had been used, and in one gonococcic vaccine as well.

The improvement after autogenous vaccines thus procured was very great.

THE COMPOSITION AND PREPARATION OF PROTEIN MILK.

In the *American Journal of Diseases of Children* for September, 1915, COURTNEY and FALES reporting on this topic say that the routine procedure followed in the hospital diet kitchen was as follows:

A quantity of whole milk, usually eight or ten liters, was heated to about 100° F., and into it was gently stirred for a moment one junket tablet, dissolved in a small amount of water, for each liter of milk. The milk was left standing, covered, at the temperature of the room, usually about 72° F., for thirty or forty minutes. It was then poured on two thicknesses of cheesecloth, by tilting which the curd was gently rolled from side to side and the whey drained away in the course of eight or ten minutes. Water was then poured on the curd and the manipulation repeated. This washing was done twice. The curd was then placed on a fine wire sieve, fifty meshes to the inch, and rubbed through it with a metal vegetable masher, with the gradual addition of one-half liter of buttermilk to each liter of whole milk used for the curd. Enough water was then added to make the volume equal to that of the original milk.

The chief variation in the composition of protein milk is in the fat. Uniformity is secured not only by the use of ingredients of uniform composition, but, what is much more important, by the exercise of great care in the handling of the curd. It should be suspended for a short time or allowed to rest for fifteen minutes on the sieve before manipulation to drain off the whey; care in pressing the curd through the sieve is also essential.

Since the value of protein milk is in a large measure due to its low sugar content, the washing of the curd with water is a useful means of removing an additional amount of sugar.

When properly prepared the amount of protein in protein milk is quite constant and is usually somewhat greater than that of the original milk; it is nearly all casein.

If the buttermilk is added while the curd is being rubbed through the sieve, it is unnecessary to repeat this part of the process.

In the ash of protein milk the amount of calcium and phosphorus is slightly greater; that of sodium, potassium, and chlorine is less than in whole milk, being reduced to a little more than one-half the proportion present.

Certain things are to be avoided in preparing protein milk: (1) stirring too much or too long while adding the rennin; (2) leaving the milk during curd formation in a cold place; (3) any unnecessary handling of the curd in straining off the whey or in washing or in pressing through the sieve; (4) subsequent heating beyond that required in feeding.

The composition of protein milk obtained from all their analyses when made as above described is: Fat, 3.0 to 3.50 per cent; sugar, 1.8 to 2.0; protein, 3.60 to 4.00; ash, 0.65.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

In the *British Medical Journal* of August 21, 1915, VROOMAN states that to draw conclusions from so limited a number of cases as he has had is somewhat dangerous, and it would be absolutely unfair to judge the merits of the treatment from the results obtained from eighteen cases. Of the first twelve of the series nine were failures, and only three showed a partial benefit. This was because they were long-standing cases, in which there was an absolutely bad prognosis anyway. To obtain good results one must, the writer is convinced, use this treatment in cases of recent origin.

The moderately advanced case of recent onset, with the disease confined almost altogether to one side, is the type of case in which pneumothorax should be produced at once. Many of these progress rapidly, and at the end of six months must be classified as far advanced, so that by the use of artificial pneumothorax we have a most valuable adjunct to our treatment. Incipient cases, with severe hemoptysis, should also be treated by pneumothorax at once. In so many of these there is such a rapid

extension of the disease after hemoptysis that it is better to give them the benefit of this treatment. The writer cannot go as far as some and advocate that all incipient unilateral cases be treated, as the results with ordinary sanatorium treatment are good. On the other hand, his experience does not encourage him to hope for much benefit from pneumothorax in the far-advanced, long-standing cases. He would distinguish here the far-advanced case which has recently become so, and that in which the disease has been of some years' standing.

A case of recent onset, which from physical signs must be classified as far advanced, but which from general condition is still moderately advanced, is eminently suited for pneumothorax, provided, of course, the disease is mostly unilateral.

Artificial pneumothorax is, then, a valuable addition to the methods of treating tuberculosis, but unfortunately its application is restricted to not more than 5 per cent of cases which have come under the writer's observation.

WHAT DO THE NEWER METHODS OF TREATMENT OFFER THE PATIENT WITH MALIGNANT DISEASE OF THE UTERUS?

CLARK in the *New York Medical Journal* of September 4, 1915, says that because of the great expense incident to the use of the radium treatment, attempts are being made in all countries to achieve as good results with the *x*-ray as could be secured from the more expensive form of therapy. Perhaps the most thorough report on this subject comes from Professor Bumm, of Berlin, who has endeavored to perfect a method of treatment by the use of the *x*-ray. He believes that eventually the Roentgen ray will prove a very effective substitute; indeed, he is inclined to predict that this latter agent will supersede radium in the treatment of uterine carcinomata. In his opinion a technique will be evolved to permit of satisfactory treatment with the *x*-ray, without resulting serious burns of normal tissue. He even makes the startling assertion that, with the use of the newer tubes, it may be possible ultimately to reach these cases without the necessity for employing vaginal treatment. In order to prove his theory, Bumm subjected six women suffering from advanced carcinoma of the cervix, in all of whom large, fungoid, freely bleeding masses completely filled the vaginal vault, solely to radiation from the abdomen or back. In all these cases the tumor disappeared completely within a few weeks. Specimens of tissue excised for microscopic examination showed almost complete destruction of the carcinoma cells, only a few scattered, degenerating remains being found, and these surrounded by dense masses of fibrous tissue. In one instance no cancer cells were demonstrated.

From these experiments Bumm believes that many deeply seated growths hitherto regarded as of unfavorable prognosis may be offered a hope of cure by the use of the *x*-ray. The technique must be very carefully carried out, however; moreover, the method requires time and is costly, facts that must be recognized by physician and patient. This observer draws attention to the fact that in many instances considerable irritation of the skin is bound to result, and this may even go on to the formation of blisters. This dermal condition, he states, will rapidly disappear under local treatment, and in his opinion is a very slight objection when compared with the ultimate cure of an otherwise hopeless malignant growth.

Out of the mass of literature reviewed by Clark, he arrives at the inevitable conclusion that the *x*-ray in these large doses must possess harmful effects upon normal tissues, and prove an actual danger from deeply seated burns. Krönig, one of the most enthusiastic exponents of the use of mesothorium and radium, does not aver that a single cure of cancer in which there were deeply seated metastases has been effected.

Basing his statements upon the literature and upon his own limited experience in the use of radium, Clark would set down as definite postulates the following conclusions:

1. Up to the present there is not suffi-

cient evidence in favor of radium to justify one in using it as a substitute for surgical measures in operable cases.

2. As a forerunner to and a follower up of an operation, it is unquestionably advisable.

3. In inoperable cases it should invariably be tried, for apparent cures have occurred in some markedly advanced cases, and in those cases that are not ultimately cured there is, nevertheless, a decided amelioration of symptoms—in many instances the offensive discharge and hemorrhage completely disappear.

4. A serious disadvantage in the use of radium is that it occasionally produces a wide-spread necrosis, leaving vesical and rectal fistulæ in the wake of its destructive action. This, however, usually occurs only in advanced cases of carcinoma, and need not therefore deter one from the use of the remedy.

From time to time chemical means for the cure of cancer have been advocated. Thus far, however, no measure has proved of sufficient value to be accorded more than a temporary place in the literature, and therefore this subject may be dismissed without further discussion.

The treatment of carcinoma by cancer extracts and various serums has also proved to be worse than valueless.

In this country a very ardent advocate of desiccating heat for the cure of carcinoma is Percy, of Galesburg, Illinois. This investigator is of the opinion that experimental work has proved that cancer cells may be destroyed when the temperature of the affected part is raised to between 50° and 55° C. For the purpose of applying heat to inoperable carcinoma masses he uses a "cold cautery" at a comparatively low degree of heat for a sufficient length of time to destroy not only the superficial but also the deeply seated growths. He has not as yet published a report of a definite series of cases treated by this method, and thus far his experiments have been conducted largely upon a theoretical basis. He maintains that he has had most remarkable results in individual cases, but as these are but isolated examples it seems that no proper estimate of this plan of treatment can be made until a carefully detailed study of the cases is presented. In justice to Percy, however, it must be said that the majority of surgeons in the United States who have attempted to use his method have started in on the assumption that he employs cauterizing heat. He protests very strongly against this use of his cautery, and prefers to speak of it as a "cold cautery." The iron should not, he declares, be hot enough to scorch a pledget of white cotton kept in contact with it for even half an hour. No smoke or odor of burning tissue should accompany its use. In the hands of skilful persons Clark believes that this method holds out a definite promise of ultimate good results, provided that the rules laid down by Percy are followed to the letter. Much credit is due to him for having elaborated this method, and where radium is not available Clark considers it the duty of every surgeon to equip himself with this apparatus.

From Clark's own experience, however, with the use of radium, he feels that this agent affords better, or at least equally as good, chances for cure without the attendant dangers of mortality incident to the operation as proposed by Percy.

From this review of the newer therapeutic methods in the treatment of carcinoma, Clark feels that we may conclude that definite progress has been made, but that as yet no genuine panacea has been discovered or even forecast by the reports of the most optimistic champion of the various methods here considered.

THE IMPORTANCE OF IMMUNIZING NURSES AND HOSPITAL ATTACHES AGAINST TYPHOID FEVER.

In the *New York Medical Journal* of September 4, 1915, FUNK states that this method is most important and gives the plan used at the Jefferson Medical College Hospital as follows:

Three doses of the vaccine are given at ten-day intervals. The first dose consists of 500 million, and the second and third doses one billion each. The inoculation is made subcutaneously on the outer side of

the left arm about the level of the deltoid insertion after the skin has been painted with tincture of iodine. The inoculations were made as a rule in the evening, so that any mild reaction might not be experienced during the night's rest. As a rule the only inconvenience of note was a slight soreness of the arm, which usually occurred after the first injection and promptly disappeared.

It is this writer's belief that a wider application of antityphoid inoculation among nurses will result in a distinct reduction in the incidence of the disease among them, a reduction which has not been accomplished in the past by instruction in the application of sanitary measures alone. The writer has been in possession of facts with regard to the source and frequency of contact infection, but has been unable to reduce the incidence of the disease. The combination of sanitary measures with prophylactic inoculation has seemed to accomplish results not hitherto obtained.

SPECIFIC TREATMENT OF MALIGNANT FORMS OF MALARIA.

Bass in the *Journal of the American Medical Association* of August 14, 1915, insists that the dose and method of administering quinine intravenously are important. The writer does not believe it is ever necessary to exceed 30 grains of quinine hydrochloride during twenty-four hours when administered intravenously, nor does he believe more than 10 grains should be given at one time. Large doses of quinine given intravenously are very dangerous. Twenty grains often produce considerable shock, dizziness, nausea, etc., and a dose of 50 grains has killed in several instances. A serious mistake often made in the treatment of the most urgent cases of malaria is the introduction of large and dangerous doses of quinine which are repeated at frequent intervals until the patient dies. The writer has known of several instances in which one hundred grains or more of quinine had been administered during the last twenty-four or thirty-six hours before death. Usually, this destructive treatment is continued because the patient continues to get worse. The symptoms attributed to a continuation of the reproduction of malaria plasmodia are usually due to quinine. Examination of the blood of such patients usually shows few malaria plasmodia, and most of them are dead or dying. The necropsy fails to reveal sufficient plasmodia to cause death. In other words the cause of death is quinine poisoning and not malaria.

In view of these statements and ideas, if correct, the amount of quinine given should not approximate the lethal dose. Danger can be further avoided by administering it in several small doses not exceeding 10 grains at any time. Ten grains of quinine hydrochloride given intravenously every eight hours or 5 grains every four hours will kill plasmodia in the blood stream and prevent their reproduction as certainly as any larger quantity, and will not endanger the life of the patient. It is true that it does not reach plasmodia lodged in capillaries until they segment and their merozoites appear in the blood stream.

Theoretically, inhalation of amyl nitrite should tend to dislodge plasmodia from the capillaries, and if done after quinine has been introduced into the blood would expose many of them to the action of the quinine that would not otherwise be exposed.

In most malignant cases of malaria the total quantity or mass of malaria produced during a single life cycle of the parasite is enormous. The volume of an estivo-autumnal schizont at maturity is about that of a red blood cell. Using this as a basis one may calculate approximately the total volume that would be produced in the body of the patient during the life cycle of a plasmodium. It is common to find in such cases at least one red blood cell in every five to contain one or more plasmodia. If it is assumed that a man has 6000 Cc. of blood, one-half of which, or 3000 Cc., are red blood cells, there would be produced 600 Cc., or more than a pint of malaria plasmodia. It is strange, but nevertheless true, that patients often recover when given proper treatment in spite of this enormous amount of foreign protein in their blood

stream. May it not be due to the fact that the protoplasm of the parasite is of very low toxicity?

As soon as a case of malignant malaria passes out of the severe attack, then of course the treatment is not different from that of other cases of malaria.

Malarial hemoglobinuria is discussed briefly. In malarial hemoglobinuria something occurs which causes hemolysis of the patient's cells. Cells containing plasmodia, and thus damaged, are affected more certainly and more extensively than normal cells. As a result they are hemolyzed, leaving the plasmodia they contained exposed to the plasma, which promptly destroys them. The only object of giving quinine in malaria is to destroy the plasmodia, and if most or all of the plasmodia have disappeared, which is the case in hemoglobinuria, there is no indication for quinine. There is a certain amount of contraindication, however, because quinine tends to increase hemoglobinuria or to precipitate attacks in otherwise susceptible individuals.

Finally the proper specific treatment of malignant or pernicious malaria is quinine administered intravenously.

The dose should never exceed 10 grains of the hydrochloride.

The total quantity should never exceed 30 grains during twenty-four hours.

Malarial hemoglobinuria does not require quinine. Quinine is harmful in most cases of hemoglobinuria.

ON THE USE OF SCOPOLAMINE-MORPHINE IN LABOR.

CROOM in the *Edinburgh Medical Journal* for August, 1915, reaches these conclusions:

No absolute routine treatment should be adopted.

Every case should be treated upon its own requirements.

The physician must be in constant attendance from the first dose, which should be administered when the pains become regular early in the second stage of labor.

The patient should be kept as quiet as possible.

The quieter the surroundings, the more successful the result.

It is important that the preparation should be fresh, and accurately prepared.

Fetal hearts should be carefully watched.

Artificial delivery, when necessary, should be accomplished under chloroform.

Oligopnea should be carefully watched for and treated when present.

SODIUM BICARBONATE IN HAY-FEVER.

In the *New York Medical Journal* of August 21, 1915, KELLOGG reports on this topic.

The writer's case-records show a series of fifty cases of hay-fever, covering a period of three years. The first patient presented a general acidosis with a mild and transient glycosuria; the second high specific gravity of urine with a marked acidity. Acting on the theory that the general condition served as a primary cause by reason of certain irritating qualities of the blood, making the mucous membranes hypersensitive, the writer gave both patients sodium bicarbonate in drachm doses three times a day. Such a marked relief from the rhinitic symptoms followed that he felt justified in administering the same treatment to the remaining forty-eight.

Reviewing the records, he finds that ninety per cent of the patients enjoyed a marked amelioration of symptoms, and seventy per cent complete relief after a few days' treatment; the remaining ten per cent were not as markedly benefited, although they all seemed to show some improvement.

The improvement of the local symptoms seemed to be independent of the exciting cause. Some suffered from the inhalation of cottonweed; some of ragweed; some of wild rose; others of goldenrod; and a few presented precedent lesions of the nasal interior. The alkali acted nearly the same in the majority of cases regardless of local or general conditions. It appeared to have a desensitizing action upon the mucous membranes. Possibly it may have also had some influence in keeping the toxins of the pollen from becoming soluble.

In three cases he found it necessary to supplement the treatment by the administration of a nasal spray of sodium bicarbonate solution. Regarding the effect the alkali may have upon the anaphylaxis or the allergic phenomena, he is unprepared to speak. The fact remains, however, that at least marked relief was given in a goodly number of cases, and for this reason he feels justified in reporting them.

This is a preliminary report. It will be followed by a more detailed one later.

THE RELATION OF VENTRICULAR FIBRILLATION TO CLINICAL CHLOROFORM SYNCOPE.

In the *Lancet* of August 7, 1915, EMBLY says that whether we are to conclude that ventricular fibrillation or cardiovascular inhibition is the cause of clinical chloroform syncope will have to rest with the weighing of respective approximate analogies. These analogies are set forth as follows:

1. Syncope from cardiovascular inhibition in dogs occurs only in the period of induction. This is the period of incidence of clinical chloroform syncope. That of ventricular fibrillation in the cat may occur at any time in reinduction during a prolonged course of administration.

2. Cardiovascular syncope from chloroform in the dog is frequently recovered from by artificial respiration, either alone or in conjunction with heart massage. This coincides with the recoveries from syncope in clinical instances. In the writer's experience established syncope from ventricular fibrillation in cats is not recovered from. If it is ever recovered from it must be very rare.

3. The control of the cardiac rhythm in the dog is markedly vagal and approximates in this respect to that of the human. In the cat, on the other hand, marked vagal control is not characteristic, and such control is readily inhibited. As already shown, a heart under vagus control is not prone to ventricular fibrillation; hence, like that of the dog, the human heart should not be liable to ventricular fibrillation.

4. Reflex syncope from cardiovascular inhibition in dogs under chloroform anesthesia occurs as readily as that in cats from ventricular fibrillation.

5. Syncopal states occur clinically either reflexly or from overdose, in which the heart does not stop, but the rate becomes very slow. This resembles similar states occurring in the chloroformed dog which are promptly corrected by vagotomy.

This statement appears to the writer to show a considerable balance of probability in favor of cardiovascular inhibition as being the cause of clinical chloroform syncope. In view of this, one must regard the protest made by Levy against the exercise of care to prevent overdosage as unwarranted by the data and as a dangerous teaching.

SOME OBSERVATIONS ON THE USE OF PITUITARY EXTRACT IN OBSTETRIC CASES.

The *Glasgow Medical Journal* for September, 1915, contains an article by MACFARLANE on this subject. He says that normal labor should absolutely exclude its use. The indications for its employment are:

1. In primary uterine inertia one must be absolutely certain that labor has begun, and not be tempted to use this substance on the occurrence of slight and premonitory uterine contractions. The extract has little or no power of initiating contractions. Further, the cervix must be dilated or easily dilatable.

2. In secondary uterine inertia one finds the greatest usefulness of this preparation. In practice one frequently finds the uterine contractions lessening during the expulsive period, and consequently there is frequent recourse to forceps extraction. The use of pituitary extract will very often obviate such operative interference, and likewise quickly terminate a second stage of labor, provided there is no undue obstruction.

3. In postpartum hemorrhage it has been employed as a preventive where such hemorrhage was feared. Some authorities question its superiority to ergot; others combine it with ergot hypodermically. It is stated that pituitary extract causes more frequent

uterine contractions; ergot and its preparations only strengthen the individual contractions. The writer's observations lead him to believe that a full dose (1 Cc.) of pituitrin causes marked uterine contraction of a prolonged nature, and scarcely permitting a uterus to bleed. One must always remember that severe bleeding may take place from a lacerated cervix, and yet the uterine body be firm and hard as stone. It has also to be borne in mind that there is a greater bleeding during the third stage—or rather immediately after the expulsion of the placenta—if this preparation has been employed early in labor, but this can be controlled by giving an injection of ½ Cc. immediately after the expulsion of the placenta.

4. In abortion cases, or in the induction of labor, this preparation does not begin contractions, but after free dilatation of the cervix by the bag or other dilator, uterine contractions having been started, the pains become stronger.

The following contraindications to the use of pituitary extract during labor should be carefully borne in mind.

1. Anemic patients sometimes become suddenly blanched and faint after its use. This the writer has noticed on three occasions, and it caused considerable alarm.

2. In stout, flabby patients he has seen the condition noted in No. 1—probably due to some altered muscle condition of the heart.

3. Chronic kidney affections and arteriosclerosis are distinct contraindications—at least considerable caution is necessary in all cases of high tension pulse.

4. Marked pelvic contraction prohibits its use.

5. A rigid and not easily dilated cervix should constitute a distinct contraindication. Severe laceration of the cervix and rupture of the uterus have been reported from the injudicious use of these preparations.

6. If very violent uterine contractions are caused by the injection there may be danger to the fetus, and chloroform anesthesia may be required.

CANNABIS SATIVA—IS THE MEDICINAL VALUE FOUND ONLY IN THE INDIAN-GROWN DRUG?

In the *Journal of the American Pharmaceutical Association* for April, 1915, HAMILTON concludes that, first, American hemp contains the active constituent; second, if equal care is exercised in selecting the proper part of the drug for extraction, no material difference in activity will be found between extracts of Indian and American hemp; third, apparent lack of activity and variability in activity applies equally to both varieties of this drug; fourth, under proper direction there is no valid reason why American hemp cannot be collected to advantage to replace the imported article.

MORPHINE AND SCOPOLAMINE AMNESIA IN OBSTETRICS.

In the *Journal of the American Medical Association* of September 18, 1915, POLAK says that granting, for the sake of argument, that "Dammerschlaf" is a rational obstetric procedure, what are its indications? It may be used in any labor in which the pains are actually established and there is no marked disproportion between the head and the pelvis. It is especially suitable in long, painful, first-stage labors, or in minor degrees of contraction when it is desirable to give the woman a full test of labor, and in the neurotic women of the mentally and physically unfit class. It is contraindicated in primary uterine inertia, marked pelvic contractions, accidental hemorrhage, placenta previa, the presence of a dead or dying fetus, as well as in obstetric emergencies, as prolapsed cord, prolapsed arm, and transverse presentations in which the membranes have long been ruptured.

From the writer's experience he can state with reasonable positiveness that this method has certain definite advantages: namely, first, the patient, in from 70 to 80 per cent of the cases, has a practically painless labor; second, that the nerve exhaustion which comes after prolonged labor is absent when morphine and scopolamine

have been used properly; third, that the milk secretion is definitely increased, as shown by the gain in weight of the children in his series; fourth, that the cervix dilates more easily under this form of medication, hence cervical injuries are less frequent; fifth, that the number of midplane forceps operations is diminished; sixth, that the cardiac patients, even when there is some break in compensation, go through labor with a minimum of nervous apprehension and less muscular effort; seventh, the toxemic cases, even with increased blood-pressure, go through labor with less likelihood of convulsions, and the urinary output is not affected; and, finally, more babies are born alive owing to the more accurate observation of the fetal heart and the observance of obstetric indications than is common under ordinary methods. The dangers to the mother are practically *nil,* to the child the danger is from the prolongation of the second stage due to overdosage, and there is an interrelation between these two.

The writer has found little difficulty in watching the course of labor by abdominal and rectal examination, and in this way the number of vaginal examinations has been minimized. During the second stage the fetal heart should be auscultated every fifteen minutes and any change in its rhythm or rate noted. A prolonged second stage is injurious to the child, and this condition is met by the application of a tight abdominal binder, forced flexion of the thighs on the abdomen, expressio fetus, pituitary extract when the head is on the pelvic floor, and a median perineotomy in the presence of a rigid perineum. A proper appreciation of these suggestions will minimize even the number of low forceps required to terminate the second stage. The very severe pain of this stage may be relieved by nitrous oxide and oxygen, as suggested by Webster and Lynch, or the employment of a few drops of chloroform.

In the better class of patients there is little or no delirium. In the lower and more ignorant class considerable restlessness is always noted in the second stage. From the writer's personal experience and from the admirable statistics based on 1000 cases collected by Dr. Beach, which include the work of twenty-six different operators, the following conclusions can be drawn:

1. The twilight sleep state is a reality and is applicable in any labor in which there is no primary inertia, marked pelvic contraction, or the presence of obstetric accidents.

2. It is especially applicable to nervous women of the physically unfit type.

3. It is a valuable adjunct in the management of border-line contractions, for it allows the woman a full test of labor.

4. It is distinctly a first-stage procedure and bears the same relation to the first stage as chloroform and nitrous oxide bear to the second stage; it relieves the pain but does not inhibit the progress of labor.

5. It is particularly useful in cardiac cases as it relieves the nervous apprehension and secures dilatation with less muscular effort.

6. It diminishes the shock of labor, whether that labor be normal, prolonged, or operative.

7. It does not diminish the milk supply.

8. It does not predispose to postpartum hemorrhage.

9. It does decrease the number of high forceps operations.

And, finally, it has a distinct place in hospital obstetrics, and should be tried out by those who have control of sufficient material definitely to determine its position in obstetric practice.

HORMONES AND VACCINES.

In the course of an article in the *Journal of the Royal Army Medical Corps* for August, 1915, FIRTH tells us that in dealing with the therapeutic use of hormones it is convenient to divide the hormonic actions of the body into two classes, or the acute and chronic. A typical example of the former is the mechanism for secretion of the pancreatic juice, where the entry of acid chyme into the duodenum liberates in the cells of the mucous membrane a chemical

substance, secretin, which, absorbed by the blood-vessels of the gut, is carried to the pancreas, which it excites to secretory activity. Other examples of the same class are the production of adrenalin by the suprarenals under conditions of fright, and the chemical regulation of the activity of the respiratory center in accordance with the metabolism of the muscles and the production of carbonic acid. Although carbonic acid and adrenalin are being produced constantly in the body, their amount may be increased largely under certain conditions; the production of adrenalin is particularly a beautiful example of refinement of means by Nature for the one great end, namely, the undertaking of active movements for offence or defence. These demand a high blood-pressure, increased blood-flow through the heart, and a mobilization from the liver of the glycogen store of that organ, whereby the muscles are flooded with the food most readily utilized by them to supply the extra energy demanded. By this extraordinary power of raising blood-pressure, adrenalin is the magician which instantaneously initiates these essential factors for sustained effort. Even the clotting of blood by adrenalin is but a further elaboration to check leakage in any chance wound of the body during action; and the very machinery employed to prepare for combative effort may, with the cowardice of civilization and by a curious antithesis of emotions, be set as powerfully in motion only to express fright.

In all these cases it is essential that the reaction take place at once, and cease as soon as the exciting cause is removed. The hormones associated with these reactions must, therefore, be capable of rapid disappearance from the body, either, as in the case of secretin or adrenalin, by oxidative destruction, or, as in the case of carbonic acid, by elimination. Owing to the ready destructibility of both secretin and adrenalin, their employment in a substitution therapy is limited, and their administration by the mouth practically useless. Similarly, their only use is as drugs, because, though we can evoke the physiological action of these substances by introduction into the blood-stream, it is difficult to control or grade their action, as must be the case under normal or natural conditions. Adrenalin is constantly used for its local effects on the blood-vessels; personally, one employs it as an excellent and rapid means of stopping bleeding after a cut during shaving, but it is practically useless to replace the functions of an absent suprarenal medulla. It is known to be the most efficient cardiac stimulant, but its employment in a case of failing heart is discounted by the inability to dissociate its power of vascular constriction, and increasing the resistance to the blood-stream, from its action on the heart. Although secretin is an infallible excitant of pancreatic secretion it is doubtful whether good results can be expected to follow its use; it should be remembered that this alkaline juice enters the duodenum immediately after a certain amount of acid chyme, and the secretion of the pancreatic juice lasts only so long as the duodenal contents are acid. Cases in which secretin has been given to healthy animals have resulted in symptoms of acute collapse produced by the entry and non-neutralization of the highly alkaline pancreatic juice and degradation changes in the intestinal mucous membrane.

THE TREATMENT OF HIGH BLOOD-PRESSURE.

In the *Journal of the American Medical Association* of September 18, 1915, ELLIOTT states that the most important function of the therapist in high blood-pressure is the management of the cardiac phase. In the later stages when asystole has begun to develop, well-directed medical treatment may afford immense help toward the prolongation of life and efficiency.

Cardiac failure may develop in either of two ways in arterial hypertension—that is, as left ventricular dilatation with falling systolic pressure and diminishing pulse-pressure, or as a high-pressure stasis with rising systolic pressure and pulse-pressure maintained or increased. The former type

is characterized by relative mitral insufficiency and broken compensation with edema, the latter by splanchnic stasis, gallop rhythm, medullary dyspnea, often without edema and without heart murmurs.

High-pressure stasis calls for free hydragogue catharsis, perhaps bleeding; the type of left ventricular failure demands neither of these measures. They both require digitalis stimulation. Digitalis in the end becomes the staff on which the high blood-pressure invalid must lean. The writer makes the statement advisedly that digitalis is the most useful drug that we possess in high blood-pressure of whatsoever origin. The reason for this is that, after the maximum of hygienic and dietetic control has been enforced, no more can be done for cardiorenal hypertension, but we must wait until the heart begins to fail; then life may be prolonged for months and even years by the judicious use of digitalis and its congeners. The fact that the blood-pressure is high need not deter us from using digitalis. It acts just as well and even better with a high pressure than with a falling pressure. Indeed, it will lower a rising pressure and raise a falling pressure, provided cardiac embarrassment is the underlying cause.

Elliott's experience would lead him to urge that digitalis be employed early, at the very appearance of cardiac decompensation. It is a great mistake to reserve its use until further cardiac failure is in progress. We have to remember that we are dealing with an exhausted degenerated heart muscle, and should go to its rescue before it is placed at too great disadvantage. Digitalis early should be the rule, and once its employment has been begun, it should be continued until thorough compensation has been reëstablished. The writer has felt in certain cases that the cardiac status, even after apparent recovery of compensation, was too insecure to warrant discontinuance of support, and has continued digitalis medication as a routine for months and years with the greatest benefit. When compensation is badly broken and venous engorgement severe, the full therapeutic effect of the digitalis series cannot be secured by oral administration. Under such conditions its employment should be intravenous. Many times he has secured prompt and efficient support in this manner after administration by mouth had failed.

Strophanthin in sterile solution by intravenous administration is a highly efficient preparation in the heart failure of high blood-pressure. The writer can testify from many gratifying experiences to its rare value. As a means of picking up a failing ventricle, he knows of no equal of this preparation. If the rules that should safeguard the administration of this extremely powerful and toxic drug are carefully observed, it may be used without risk and often with the greatest benefit. One-half cubic centimeter of 1:1000 solution of strophanthin injected into the elbow vein at appropriate intervals for several doses will often induce cardiac reaction when other measures fail. After its effect becomes apparent, digitalis may be substituted and the effect continued. Unfortunately, in many cases the myocardium is so completely exhausted that response to any form of stimulation is impossible; but when any power of reaction remains, this preparation will best elicit it.

INFANTILE ASTHMA.

WARBRICK in the *Buffalo Medical Journal* for September, 1915, asserts that the cause of the trouble, whatever it is, should be looked for and removed; such as the presence of adenoids, edema of the glottis, or any nasal obstruction.

The bronchial form should be treated according to symptoms. The bowels should be kept well open as an important point in these cases with children, as any clogging up only tends to aggravate the trouble.

In the capillary form especially is this necessary, and also the catarrhal form tending to suffocation.

Fresh air is important and cold douching may be useful.

In the case of an overloaded stomach causing distress and gasping for breath, the

child should be made to vomit at once. This can readily be done by putting the forefinger of the right hand down the child's throat and at the same time bending its head downward. Children should not be stuffed at any time with all kinds of food such as cakes, pie, meat, or candies. Light nourishing food in the proper amount should be given.

The fumes of nitre should be avoided, also antiasthmatic cigarettes, and inhalations. The herpetic form should be treated by tonics and cod-liver oil. For the spasm morphine sulphate 1/30 grain and atropine hypodermically are useful.

Spraying the nose and throat may be useful, also adrenalin chloride used in the nose and silver nitrate applications. In the catarrhal form any congestion of the nasal or pharyngeal mucous membrane should be relieved. This may be done by spraying the nasal passages, the use of adrenalin chloride to contract the blood-vessels, and repeated applications of a weak solution of silver nitrate to the front of the nose.

ROENTGEN-RAY IN GASTROINTESTINAL AFFECTIONS.

AARON in the *American Journal of the Medical Sciences* for September, 1915, reaches these wise conclusions:

1. That the roentgenologist should be a trained and experienced anatomist and pathologist.

2. That there should be standardization of methods and technique.

3. That the physician acquire the ability to properly estimate the diagnostic value of a Roentgen-ray report.

4. That the patient should not be subjected to operation without a confirmation of the original findings by a second Roentgen examination made after an interval of two or three days.

5. That the clinician must not attach too much significance to the Roentgen-ray findings unless they are absolutely decisive.

6. That the lesion discovered by the Roentgen-ray must be a constant finding, regardless of position or slight variations in technique.

7. That great care must be exercised to differentiate physiological and spastic conditions from those that are essentially pathological.

8. That the Roentgen-ray report should be considered on the same basis as any laboratory report.

9. That the physician must carefully correlate the Roentgen-ray findings with the anamnesis and the clinical and laboratory findings.

ROENTGEN-RAY TREATMENT OF EXOPHTHALMIC GOITRE.

In the *Medical Record* of September 4, 1915, SIMPSON reaches conclusions as follows as to the use of the *x*-rays in Graves's disease:

1. Many cases of exophthalmic goitre are associated with enlarged thymus glands, and this association often causes serious postoperative symptoms and even death.

2. While such an association will seriously complicate and prolong a surgical operation, it offers no such added difficulties for the Roentgen therapeutist.

3. Not only such ductless glands as the ovaries and testicles but also the enlarged thyroid and thymus glands as well are very sensitive and may be atrophied by the Roentgen ray.

4. This theory has been amply proved by laboratory experiments and clinical results in many cases of hyperactivity of the thymus gland seen in cases of status lymphaticus and hyperactivity of the thyroid gland—exophthalmic goitre.

5. If these cases of status lymphaticus and exophthalmic goitre will give the Roentgen ray a fair and impartial trial the majority of them will be relieved of all troublesome symptoms and make unnecessary a disfiguring, dangerous, and often futile operation.

6. The above findings are not entirely the writer's own hastily formed ideas, but include the results of several hundred cases of exophthalmic goitres that have been successfully treated by the Roentgen ray, the literature of which is open to all who may care to investigate it.

THE HOW AND WHY OF VACCINATION AGAINST SMALLPOX.

FORCE in *Northwest Medicine* for September, 1915, gives these "don'ts":

1. Don't vaccinate with a tube of virus ordered by telephone from the nearest drug store unless you know that the druggist keeps his stock of biologic products on ice and is careful to renew them within the expiration dates stamped on the package.

2. Don't cross-scarify the arm. The vaccine colony has to grow outside the scab. A large scab tends to produce a slough and a deep pit in the arm. It is forbidden by law in Germany. Use a needle, making two single scratches about three-quarters of an inch long and one inch apart, or better still use a small chisel with a rotary motion, removing three small circles of epidermis about one-eighth inch in diameter each.

3. Don't remove too much epidermis. Large scabs favor tetanus. Many doctors think that the amount of vaccine used has something to do with the protection. This is incorrect. A very small colony of vaccine germs planted on the skin will multiply until the growth is checked by the antibodies. A single cubic centimeter of vaccine virus is enough for 250 vaccinations.

4. Don't vaccinate on the leg. The small scars do not disfigure the arm; the leg is exposed to injury, bears the weight of the body, and in babies is difficult to keep clean.

5. Don't use shields or bunion plasters to cover the vaccination. The shield causes the arm to swell and aggravates the soreness. Bunion plasters and wads of cotton are just as harmful. The best dressing is a plain square of gauze held in place by four strips of adhesive tape. Write the date for return on one of the tape strings.

6. Don't tell the patient that the headache and slight fever following the vaccination are due to varioloid. Varioloid may follow vaccination in point of time, but only when the immunity has expired, which usually means from ten to twenty years.

7. Don't put salves on the vaccinated area. On the ninth day a gauze bandage may be placed around the arm and kept moist with 50-per-cent alcohol in order to relieve the soreness. After the tenth day use a simple dusting powder until the scab separates. Apply tincture of iodine to the fresh scar.

8. Don't issue a certificate that you have used due diligence and cannot secure a successful vaccination. If you think that the person ought to be immune, look for the immunity reaction within twenty-four hours after the vaccination. If you think the person is not immune use fresh virus. Something has to happen.

9. Don't forget that the reaction of immunity is a sign of successful vaccination. Evidence of immunity is all that we are striving for, and a sore arm is not necessary to prove it.

10. Don't forget that inert virus may contain the necessary proteins to give the reaction of immunity. If you doubt the virus try it on a previously unvaccinated person.

11. Don't forget that vaccine virus is thoroughly tested before it leaves the vaccine establishment. If it fails in previously unvaccinated persons, do not blame the manufacturer until you have investigated the conditions surrounding the virus after it left the establishment where it was produced.

A SIMPLE TREATMENT FOR IVY POISONING.

LANE in the *Medical Record* of September 11, 1915, gives this advice as to the treatment of ivy poisoning:

The affected areas are loosely covered with two or three thicknesses of gauze or cheese-cloth, which is kept continually moist with a solution of boric acid, the strength of which is unimportant. The gauze is frequently changed in any case, but the frequency depends somewhat upon whether there is much oozing from the blebs. The larger blebs are opened, but it is unnecessary to touch the smaller ones. If the gauze is used more than once, it is rinsed and boiled before it is reapplied. As the largest number of these cases occur during hot weather it adds to the comfort of the patient to keep a small piece of ice in the solution so that it may be applied cold.

This is usually the whole treatment, but in cases in which the itching is very intense some additional relief may be obtained by gently sponging with a weak solution of alcohol when the gauze is changed. A simple ointment may be used for protection after healing has begun and the skin has become fairly smooth.

The advantage of this treatment is that no trauma is inflicted, and that if powder settles on the skin from evaporation of the liquid it is easily dissolved at the next application by using a more dilute solution.

GLUCOSE SOLUTION AS A PROPHYLACTIC IN SHOCK.

In the *American Journal of the Medical Sciences* for September, 1915, BURNHAM reminds us that it is important that patients about to be subjected to major surgical operations should, when possible, be put through a course of forced carbohydrate feeding for a short period immediately preceding the operation, and should receive carbohydrates in an available form soon after operation.

Secretan has called attention to the importance of giving food shortly before anesthesia as a prophylactic measure against postoperative shock. He asserts that it is usually safe to give some easily digested food from two to four hours before the anesthesia is begun. A patient in whom there is no contraindication to oral feeding may be given a meal containing a considerable quantity of carbohydrate food in the shape of bread or cereal eight to twelve hours before operation, and a feeding which contains 100 to 200 calories in the shape of easily absorbable carbohydrate about three hours before the anesthesia is begun. In practice the writer has found that the latter is best accomplished by giving either six ounces of coffee or orangeade to which has been added one ounce of lactose. The above procedure should assure the organism of a considerable store of readily available glycogen during the period of anesthesia.

If we grant the plausibility of the argument up to this point, it must necessarily follow that carbohydrate feeding should be instituted at the earliest opportunity after the operation. During the anesthesia, and for a period afterward, varying from a few hours to a few days in individual cases, oral feeding is impossible, so that we are, of necessity, forced to resort either to subcutaneous or rectal nutrition, or both. The writer has discussed the various types of nutritives which theoretically may be used for subcutaneous nutrition, the conclusion being reached that glucose is the only form of nutritive which is clinically available for this purpose. Barlow recommended the subcutaneous use of glucose in 1895, and it has been in sporadic use since that time; but it was not placed upon a scientific basis in surgical cases until the publication of Kausch, in 1911.

Sugar, in the form of glucose solutions, supplies energy to the cells and aids in tissue repair; it diminishes acidosis and thus tends to remove one of the factors in the cause of postoperative vomiting; it neutralizes certain poisons in the circulation (the conjugate glycuronates is the best example of this action); and it is possible that it acts as a direct cardiac stimulant and food. In addition to this, the solution introduced has many of the advantages and few of the disadvantages of saline solutions. Only a small percentage of the glucose injected hypodermically finds its way into the urine (usually from 2 to 5 per cent). The remainder, as has been proved by the calorimetric experiments of Vezar and von Fejer, is burned in the body, causing an increase in heat formation and a corresponding increase in the respiratory quotient.

Kausch recommended 7-per-cent solutions intravenously and 4- to 5-per-cent solutions by hypodermoclysis. Solutions should be freshly prepared and sterilized, as they become more easily contaminated than does the ordinary saline. Strictly speaking, contamination is as easy in one as in the other, but owing to the fact that glucose is an excellent culture medium, accidental contamination is of more consequence than it is in common salt solution. Following the use of glucose by hypodermoclysis, there is not

more pain or discomfort than after the injection of a physiological salt solution. As much as two or three liters, representing from 90 to 210 grammes of glucose, may be given during twenty-four hours, the amount depending on the character of the case and the urgency of the symptoms.

In addition to hypodermic administration, glucose may be given by proctoclysis during anesthesia and for a period of several days after operation. It is given in 5-per-cent solution, dissolved in ordinary tap water, 12 to 16 ounces being introduced during the operation, and its administration continued, by the Murphy drip method, after the patient has returned to the ward. This method is so simple and has apparently been of such value that it should be used as routine after every severe major operation. From 300 to 500 calories a day may be introduced by one or both of the above methods without discomfort to the patient. This quantity, while insufficient to supply all the total energy requirement, is of great importance in the prevention of excessive nitrogen waste.

X-RAY TREATMENT OF UTERINE FIBROIDS.

STERN *(American Journal of Obstetrics,* September, 1915) after reporting successful cases concludes that the dangers of *x*-ray therapy in the treatment of uterine fibroids, with proper technique, are absolutely none. In cases in which we want to establish a permanent amenorrhea, the massive dosage method (Freiburg technique) is decidedly superior to the fractional dosage method, as giving quicker and more satisfactory results.

In younger women in whom we merely aim to get a diminution of the size of the fibroid, with a temporary amenorrhea and a reëstablishment of menstruation, the fractional dosage method is preferable. In these cases, a comparatively short time after the reëstablishment of menstruation, the patients may conceive, go through a normal labor, and give birth to normal children. All uncomplicated cases of uterine fibroids are amenable to *x*-ray treatment. The nearer the patients are to the climacteric period, the surer and quicker the results. In these cases, properly treated, we can look forward to getting practically 100 per cent cures.

Frank in the same journal states that Röentgenization of uterine fibroids cannot be used with safety in rapidly growing tumors; in cases of metrorrhagia in which complete preliminary curettage with microscopical examination of the curettings is not feasible; in complicated cases in which ovarian cysts or serious adnexal trouble cannot be excluded; in fibroids complicating pregnancy. He believes that the rays should not be used where expense is a factor, or where time is a factor. The rays are of chief value where operation is declined; where operation is contraindicated by serious heart, renal, or pulmonary lesions; where operation is contraindicated because of extreme psychical unrest. Consequently *x*-ray treatment is applicable to at the most 5 or 6 per cent of all patients having fibroids.

Pfahler *(New York State Journal of Medicine,* September, 1915) says that Roentgen therapy must be looked upon as a very efficient adjunct to the gynecologist's armamentarium, and while he believes that the rays should be applied by the roentgenologist, he should at the same time work hand in hand with the gynecologist. Deep Roentgen therapy stops the hemorrhage associated with uterine fibroids. This is followed by a gradual disappearance of the tumor. This atrophic process may extend over several years, continuing long after the cessation of treatment. The treatment of metropathic hemorrhage is almost uniformly successful. Uterine hemorrhage occurring at the menopause, when not malignant, will usually respond very quickly. There should be an increase in weight and an improvement in the blood condition following treatment, and when this does not occur suspicion of malignancy should be aroused (Albers-Schönberg). Some good results can be obtained in inoperable carcinoma. The deep Roentgen therapy should be especially recommended as postoperative treatment in all cases.

THE MODERN TREATMENT OF BURNS.

TUDER (*International Journal of Surgery*, August, 1915) for the treatment of shock recommends morphine, atropine, camphorated oil, and caffeine or digitalin. Normal saline, warm, with a little adrenalin added, or glucose-soda solution should be administered continuously during the stage of severe shock by enteroclysis. Oxygen inhalations, if available, should be employed when the condition of shock is grave.

The method advised for cleansing the burnt part is sterile normal saline, hydrogen peroxide, tincture of green soap, and if there be grease or oil or much dirt, benzine followed by alcohol. Tincture of iodine is so generally used as an application to dirty wounds that we naturally think of it in connection with burns, but it is too irritating. Saturated solution of bicarbonate of soda is regarded as effective for relieving pain. The best solution is said to be a saturated aqueous solution of picric acid. Ehrenfried is quoted to the effect that this is fifty times more active as an antiseptic than the same strength of carbolic acid solution. It coagulates albumen, and over a clean denuded surface a protective aseptic scab is formed by the coagulation of the secreted serum. Sterile gauze is applied to the wound and thoroughly saturated with the picric acid solution, and over this oiled silk and a gauze bandage are placed. The solution is said to be bland, unirritating, and analgesic. The dressing is removed the third or fourth day and the vesicles are punctured. This is repeated every four or five days until healing is completed, or oftener if there be suppuration or infection. If the urine becomes cloudy the picric acid solution should be stopped.

The author predicts that the open-air treatment will be that of the future. His conception is that after cleansing the entire area is left open, the lesion being exposed to the sunlight at first for half an hour, this time being gradually increased to an hour or more each day. The temperature of the room is kept high to favor drying. Bland dusting powders are applied daily in the open-air treatment, stearate of zinc and zinc oxide being the favorites. Scarlet red in an ointment of from five- to ten-per-cent strength is recommended where the healing of the growth is slow. It should be applied only to the granulations, as it is irritating.

It is a matter of frequent observation that a person suffering from severe or sometimes even a mild burn and doing well may suddenly become profoundly ill, exhibit convulsions, delirium, falling temperature, and die. The tendency now is to explain these late phenomena as a condition of anaphylaxis induced by absorption of substances from the burned tissues, which act like an antigen; the body after a time becomes sensitized, and further absorption is followed by anaphylaxis phenomena. Heyde notes that similar phenomena can be produced in animals at will by inflicting a small burn, or reimplanting some of their own tissues incinerated outside.

PREVENTION OF FISTULA IN ANO.

LOCKHART-MUMMERY (*Lancet*, Oct. 2, 1915) observes that the usual fistula begins as a small tear or wound in the mucous membrane of the anus at the point of greatest resistance—the "white line," or upper level of the external sphincter. Infection follows, and the submucous wall of the bowel is involved. Thereafter an abscess readily spreads in the loose cellular tissue, which is particularly abundant in this area, and since in this situation there is no deep fascia to limit its extension, and the subcutaneous fat is here directly continuous with the fat in the ischiorectal fossæ, an abscess of considerable dimensions is rapidly formed, resulting in fistula unless promptly opened. The ordinary signs of abscess, such as redness, swelling, and heat, may not be obvious until a comparatively large size has been reached. Pain and local tenderness are the only early signs of abscess in this region, often accompanied by slight constitutional symptoms. If opened at this stage a fistula will result. Abscess may be discovered at this stage by introducing a finger into the rectum and palpating between the finger and thumb. Thus

may be found induration accompanied by marked tenderness. These signs may be sufficient to warrant an incision. The knife is introduced through the skin some little distance away from the anus. There may be shown a slight discharge of sero-pus. This does not mean the incision was unnecessary. A small drainage-tube may be inserted and stitched to the edge of the skin. It should not go to the bottom of the abscess since it is designed only to keep the skin apart and allow free evacuation of the discharge from the area of inflammation. The tube is removed in about forty-eight hours, providing the discharge has ceased.

At present the history of a case of fistula is always the same, namely, pain, tenderness in this region coming on suddenly; fomentations administered by the doctor for some days, with consequent relief from pain; then the opening or bursting of a large abscess, which fails to heal completely and becomes a fistula.

THE CONTROL OF THE OCCUPATIONAL DISEASES.

In an editorial in the *Boston Medical and Surgical Journal* of June 10, 1915, attention is called to the fact that it is within the functions of the Board of Health to establish a Bureau of Hygiene, and that the functions of such a Bureau should be the establishment of a central occupational disease clinic for research investigation on the lines of Professor Devoto's clinic for industrial diseases at Milan. Such a clinic should be separate from the tuberculosis clinics, although acting in harmony with them and in coöperation with the university and hospital clinics throughout the city; it should be the clearing house for all specific occupational diseases and industrial poisonings, should make a study of the prophylaxis of the various industrial affections met with, and should be supplied with ample means for its work of investigation and research.

There should be established an industrial hygiene educational division which should endeavor by all possible means to spread the knowledge of the causes of industrial poisoning, the preventive measures to be taken in various industries, and right modes of work and living for the industrial population. It should also, in coöperation with the various manufacturers' associations and other existing bodies, as well as with the Department of Education, endeavor to conduct a general campaign of education among employers and workers as to the prevention of occupational diseases and the preservation of the health of the workers.

TONSILS AND CHRONIC CERVICAL ADENITIS.

GARDINER (*Lancet*, Oct. 2, 1915) concludes a paper as follows:

In the majority of cases (80 per cent) of chronic cervical adenitis where no obvious source of infection is present the tonsils are infected.

The size of the tonsil makes no difference to its infectivity, except that the small fibrotic variety is likely to be more dangerous than the large.

The number of cases in which tubercle bacilli are present is relatively small, but is larger than in simple cases of enlarged tonsils.

The frequent presence of other organisms than the tubercle bacillus in these cases suggests that a large proportion of the so-called chronic tuberculous glands are in reality chronic septic glands.

The organisms are present in the deepest parts of the gland, and are therefore only removed by operations involving complete enucleation.

LATE RESULTS OF SURGICAL TREATMENT FOR FLEXED SCAPULÆ.

MARSHALL (*Boston Medical and Surgical Journal*, June 3, 1915) quotes, with approval, Goldthwaite's concept that removing the tips of the superior angles of the scapulæ may stop painful symptoms in backs if the offending exostoses or abnormally flexed upper parts which scrape over the ribs are trimmed sufficiently to prevent further friction and irritation. This operation has been performed at the Massachusetts General Hospital upon 11 patients

during the four years ending January 1, 1912. It is stated that two or three months ought to be reckoned as the minimum of time that will be required for annoying symptoms of soreness after very active use to subside; and some of the best cases have needed a year's time for perfect recovery of normal shoulder functions. Patients are grouped in three classes: first, those who should receive prompt surgical care; second, those who should delay having operative interference; third, a border-line class. Some of the cases reported showed there were abnormal scrapings of the shoulder-blades over the chest muscles, and that these palpable rubbings were stopped by removal of the tips of the superior angles of the scapulæ, yet sometimes without subsidence of painful symptoms. The operative group should include those patients of adult age, especially of middle life, who present the following features: Painful symptoms of several years' duration that have been associated with otherwise fairly good health. In connection with these limitations there should be localized tenderness combined also with abnormal crepitus at the shoulder-blades.

Extremely acute cases of much shorter duration should be included in the first group. An artificial dividing line can be suggested as a minimum limit for operative interference, namely, all cases of moderate severity in adults who have shown local signs and pathological symptoms continuously for six months, or milder cases of one year's continuous duration.

The non-operative group comprises adult cases of moderate severity that have received no treatment, or those patients that have been treated unsatisfactorily for less than one month with protective and medicinal measures. In mild cases several months must elapse before they should be considered as having passed on from the second class into the third debatable group, from which they finally may emerge at the end of the year into the first-mentioned operative group. Youthful patients with mild symptoms remain in the second non-operative class until they have grown up.

The last more doubtful group contains moderately severe types of one to six months' duration; mild cases from several months to one year's duration; and the class of neurasthenic debilitated patients who present signs or symptoms of pathological scapula irritation.

Certain patients show very good results who did not exhibit at their operations exceptionally great anatomical peculiarities, so that it seems as though long duration of their irritations was of more importance than overdeveloped and abnormal flexions of their shoulder-blades.

In contrast with patients possessing scapulæ of average development with pathological symptoms, it should be recalled that many healthy persons are carrying around flexed and overdeveloped scapulæ without any abnormal indications of those variations, just as variations in other bony structures, such as anomalies of the vertebral column, very often occur without symptoms or signs. All such individuals, however, have their health constantly menaced to a greater or less extent corresponding to degrees of anatomical variation; yet they are enabled to maintain their normal healthy activities because of high degrees of resistance of the tissues and on account of compensating powers of related parts.

It is not of rare occurrence to find slight scapular crepitus without symptoms in muscular well-developed men, and it seems that too much importance should not be attached to mere smooth rubbing of the shoulder-blades over the irregularities of the chest wall. When combined with tenderness localized at the prominent edges of the scapulæ, friction possesses then much more significance.

Tenderness in shoulder-blades generally means local inflammation; and in routine examination of many back cases in any large orthopedic clinic there are numerous examples discovered of slight tenderness without crepitus among scapulæ of debilitated persons. If these individuals do not receive protection and personal hygienic treatment they are liable to develop chronic irritations with the gradual appearance of

abnormal frictions of the blades against the chest. Perhaps it will be readily understood that when patients come for the first time with well-developed signs and symptoms it is often difficult to say whether anatomical peculiarities or vascular defects are primary origins; yet, whichever were at fault, surgical interference depends more on the severity and duration of symptoms than on underlying causes. The surgical problem simply is one of removal of irritating bony angles regardless of the manner they acquired their irritating peculiarities, and more or less irrespective of whether they are excessively or slightly developed.

Pain, as shown in this series, is referred by patients to the scapulæ, to the region between them, and around to the sternum in front of the chest in acute cases. It radiates up behind the ears at times, and also down the arms, and there may be crampy sensations in the trapezius muscle as the latter tries involuntarily to hold the shoulder in comfortable position. Pain is noticed upon motion, especially when the arms are moved in directions that demand greatest rotation.

All exhibit greater or less degrees of round shoulders, this confirming Goldthwait's idea of an origin in habitual bad posture of the shoulders during the early years when the bones are readily molded into various degrees of flexion. As the bones strengthen and harden in adult life they retain afterwards their peculiarities permanently, and can be changed only by operation.

At the time of surgical interference the eleven patients of this series ranged from fifteen years to forty-two years of age, averaging twenty-seven. The girl of fifteen still has pain in her arm, while the man of forty-two at the other extreme has perfect function of his shoulders. It seems that the best results of operation are seen in middle life, when several years' duration of symptoms have made the advantages of surgery undeniable, and while the individuals are still in active robust health.

The analyses of the cases are not entirely convincing. Thus the first girl, fifteen years old, with burning sensations at night and after using her arm thus intermittently for years, the pain being referred especially to the infraspinous region of the scapulæ with the sensation of a lump in the muscles, was immobilized with adhesive straps and with a shoulder brace in vain. Exercise and massage were equally futile. Thereafter tenderness was localized along the vertebral border near the superior angle. Very distinct crepitus could be felt while the arm was being fully elevated, and this scraping had been noticed by the patient herself.

The tip of the superior angle was removed, and the patient was discharged from the hospital in ten days. The operation wound healed perfectly without adhesions, although buried catgut sutures caused a little trouble during the first few months afterwards.

Three years and two months after the hospital treatment the patient returned for observation. She complained then of the same burning sensation in the back and arm, at times over the shoulder-blade. Examination at this time showed a perfectly healed operation scar; arm motions were not restricted at all. There was betterment of all symptoms. The author holds that the disappearance of crepitus incident to the operation, with presumably the tenderness, gives good reason to believe that the operation did no harm, that a perfectly definite defect was removed which would have become an increasing menace, and that the results justified the treatment.

The second case, a woman thirty-nine years old, suffered for fifteen or more years with pain between the shoulders. Examination showed marked tenderness of the superior angles of both scapulæ, which seemed abnormally prominent. These scapulæ were trimmed in February, 1911. The shoulders were first partially immobilized with adhesive straps, then regular exercises were tried without appreciable benefit; high-frequency electrical treatments next were experimented with, and repeated applications of radiant heat

seemed to the patient finally to improve the symptoms gradually.

There seemed improvement when the patient was seen nearly four years after operation; though there was some return of pain after use, the patient expressed himself as well content with the result.

The third case, that of a strong man with knife-like pains in his shoulder-blades extending around at the same level to the sternal region in front, noticed these same symptoms in carrying a quarter of beef on his shoulder. Continuance of this work aggravated the first mild ache until it became unbearably severe after four months.

Before the operation soft crepitus could be felt on moving each scapula, and the upper vertebral border of the left one was tender to pressure. Moderate incurving of both tips was found at operation, and pieces of bone one-half an inch across were removed from them. In ten days the patient could use his arms comfortably. One year later there was a return of pain between the shoulder-blades, and mechanical exercises were advised; but these were not carried on long because the symptoms subsided.

Four years after operation pains in elbow, wrist, and shoulder were complained of, and an *x*-ray showed some hypertrophic changes about the elbow.

Five years after operation both shoulders were perfectly normal in strength and function. There was no crepitus or tenderness over the scapulæ, and the patient continued to work handling heavy beef. He thought the operation had been of very great benefit. As to the summary of the cases, the author's statement is as follows:

Six of the eleven patients operated on returned for observation and two reported by letter. Six of these eight thought they had been much benefited, one could not make up her mind, and one said that she could use her arms just the same as before the surgical treatment. The three persons who had not been heard from recently were all improved when they were seen soon after leaving the hospital. None say they are any worse, and no weakness or other objectionable after-effects that can be ascribed justly to surgery have been discovered in any of them. With regard to time for recovery, acute symptoms in all subsided by the time operation wounds healed enough to permit the patients to leave the hospital; and in three months the large majority had good function in the shoulders again. In a year's time some of the most protracted cases had been perfectly relieved.

Neurasthenic pains in arms in growing or debilitated persons were not relieved by scapula operations.

Non-operative treatments — shoulder braces, medicinal tonics and eliminants, hydrotherapy and exercises—should always be tried first for a month or more whenever circumstances permit. Many mild cases recover without surgery, and the latter should be employed only when subsequent advantages seem to overbalance the slight dangers and inconveniences of the operation itself, and when patients seem to be of suitable type. The most favorable cases are middle-aged persons in otherwise good health, and the most unfavorable combinations are found in young individuals from fourteen to eighteen years who are nervous and debilitated.

PARANEPHRITIC ABSCESS.

SIMON (*Deutsche Zeitschrift für Chirurgie*, Bd. 131, Heft. 5 and 6) reports from Küttner's clinic upon paranephritic abscess occurring from 1888 to 1911, to the number of 35 cases. The ages ranged from two years to fifty-eight years—21 males, 14 females; 17 right side, 18 left side. There were two recurrences. As to etiology, 8 cases followed felons; 3, direct trauma; 4, indirect trauma; 2, perimetritis; 1, appendicitis; 1, tuberculosis; 15 of uncertain origin, though 4 of these were suspected to be tubercular. As regards the bacteriology, 3 were sterile; 14 showed staphylococci; 2, streptococci; 2, colon bacillus; 1, pseudodiphtheria; in the remaining cases the organism was not determined. Special symptoms and complications were flexion of the hip in 12 cases; lung and pleural

involvement in 11 cases; bilateral suppurative pyelonephritis and calculus in 1 case, nephritis in 7 cases, and psychosis in 1 case. In 18 cases exploratory puncture was done, and without bad effect in any instance. It must, however, be admitted that through this puncture there is danger of spread of the infection. In 12 cases the twelfth rib was resected and drainage instituted. Local anesthesia was used in 5 cases, but as a rule these cases required ether.

The healing time varied from three weeks to fifteen months, but it usually was complete in two to three months. Fistula developed in two cases, and hernia in one case. One case recovered spontaneously, probably by rupture of the abscess into the pelvis of the kidney. As to the late results, 27 out of the 30 operated cases were heard from. Of these, 19 were entirely well, 4 not well, and 4 had died.

OBSERVATIONS ON THE INTRANASAL TREATMENT OF DYSMENORRHEA.

O'Reilly (*American Journal of Obstetrics,* October, 1915) states that in 1897 Fliess, the pioneer, attracted the attention of rhinologists to the connection, which was up to that time unknown, between the nose and the genitalia and the adnexa. He pointed out that in the nasal mucous membrane there were certain areas which he called genital spots; he located one on the tuberculum septi, an area about 1 mm. or possibly smaller, directly opposite the middle part of the middle turbinate, and the other on the anterior portion of the inferior turbinate on either side of the nose. If one observes, by means of reflected light and nasal speculum, at the time of menstruation these particular areas, he finds them slightly cyanotic, very sensitive to the touch of an applicator, somewhat swollen, and showing a tendency to bleed easily. Fliess' first experiments were with cocaine, which in a 20-per-cent solution was applied to the spots during an attack of dysmenorrhea. His observations were that the pains in the back and abdomen ceased after a five- to eight-minute application, and did not return until the effect of the drug had disappeared. If the anterior portion of the inferior turbinate on either side of the nose was touched, the headaches ceased, but it had no effect on the abdominal pains. If one side of the nose was treated with 20-per-cent solution of cocaine, applied to both of the spots, the headache and the pain on the opposite side of the abdomen were relieved.

Since then these results have been confirmed by Dr. Emil Mayer with menthol, cocaine, and caustics, and by Fliess and Kuttner. Different applications have been made to these spots by means of the galvanocautery, bipolar electricity, and finally with trichloracetic acid, with varying results as to the succeeding menstruation, some of which have been painless, in others the pain has not been as severe as prior to the treatment, and in some cases there has been absolutely no result at all. Seifert, following in the footsteps of Fliess, came to the following conclusions:

There are many indications pointing to a direct relation between the nose and the sexual organs, but the nerve path is unknown.

General circulatory and mechanical conditions have a greater or less modifying influence on the nose as a result of sexual conditions and functions.

Many pathologic conditions of menstruation coexist with a genuine nasal reflex neurosis or nasal hypertrophy with its results.

Uterine influence through nasal conditions may be largely explained by suggestion, by cocaine euphoria, greater in certain individuals than in others, by relief of a nasal reflex neurosis, and through the restoration of the general health as a result of restored respiration and relief of nasal congestion.

O'Reilly further quotes Brettauer to the effect that permanent relief is obtainable by nasal treatment in from 50 to 75 per cent of these cases, and states that trichloracetic acid applied to the genital spots four times at intervals between the menstrual period is usually sufficient to obtain lasting results

As to the technique, the genital spots are thoroughly cocainized by means of a pledget of cotton wet in a 20-per-cent solution of cocaine with adrenalin. This pledget is allowed to remain in contact with these spots for three minutes. They are then tested by means of a probe as to their sensitiveness, and if sensation is still found to persist, the application is repeated for another three minutes. Then a crystal of trichloracetic acid on the point of a probe is applied to the tuberculum septi, and another crystal is applied to the anterior portion of the inferior turbinate on each side of the nose. The slough that forms disappears in about five days, when the same process should be repeated; in all four applications must be made between the periods. The patient is then requested to report her results at the next menstruation. If this is favorable, no other treatment is resorted to, except that two more reports are requested at the following menstrual epochs, and if these are favorable the patient is discharged. In cases in which relief is slight, or not at all favorable, four more applications should be made between the menstrual periods, and if no benefit is reported the treatment must be put down as negative.

The chief reason for not resorting to the galvanocautery in preference to trichloracetic acid is the danger of forming synechiæ.

PELVIC VARICOCELE.

PINKHAM (*American Journal of Obstetrics*, August, 1915) observes that the chief symptom complained of by many women seeking advice for the so-called female troubles is a persistent, dull, aching pain in the left iliac region. This pain, which at times is barely noticeable and at other times very severe, is in many instances relieved by the recumbent position, is aggravated by standing or walking, and is usually worse at or during the menstrual period. This symptom is frequently unassociated with a palpable intrapelvic lesion, except, perhaps, a slightly enlarged ovary or a retrodisplaced uterus. In the parous woman there may be tears of the cervix or the pelvic floor. Women who have uterine displacements or lacerations undergo the usual operations for these conditions, and many are ultimately relieved, but some are not. Women presenting no palpable lesion except slightly enlarged ovaries are often told that they have chronic ovaritis, or that there is absolutely nothing the matter; that the pains are due to their neurotic condition. That there is always a good reason for physical suffering is a fact too frequently overlooked.

Every gynecologist will acknowledge that chronic pelvic pain is most frequently found on the left side. Herman states that in 75 per cent of the cases of retrodisplacement the pain is referred to the left side. Novak states that in cancer of the uterus, pain is referred to the left side in about 81 per cent of the cases. In a series of 2000 cases in one of the clinics of the New York Post-Graduate Hospital, 1450 located the pain on the left side. This localization has been explained in various ways, some of which seem hardly credible. Herman says that the reason is to be found in the fact that the left side is weaker than the right, not only in muscular strength but in power of resistance to painful impression. In Clarke's opinion, it is due to strong tension of the mesentery over the brim of the pelvis. Many writers attribute the cause to the anatomical arrangement of the organs on the left side—the presence of the sigmoid with its mesentery encroaching upon the attachment of the broad ligament to the brim—and the backward course of the left ovarian vein to the renal vein. This last explanation seems to be the most rational, easily accounting for the morbid conditions to which it is the object of his paper to call attention.

On the left side, the ovarian vein, the principal drainage canal of the outer part of the broad ligament, after leaving the infundibulopelvic ligament, runs inward and upward behind the mesentery of the sigmoid and descending colon to the renal vein, which it enters at right angles. It

has at best only two valves, one at its exit from the plexus, and one as it enters the renal vein. Sometimes one or both valves are missing. It is easily seen, therefore, that interference from above with the free passage of blood, or the lack of propulsive power from below, must tend to produce venous engorgement. This interference and lack of power have much less force on the right side, because here the ovarian vein runs from the infundibulopelvic ligament at an acute angle over a short distance to the inferior vena cava.

The child-bearing woman is the most frequent sufferer from this condition. During pregnancy the return flow of blood from the pelvis may be interfered with by the weight of the uterus, tight clothing, constipation, etc. Constitutional disease, debility, anemia, etc., may hinder the proper involution of the veins after delivery. Traumata of a severe prolonged labor, the use of forceps, and unskilful delivery often induce subinvolution. Lacerations of the parturient canal destroy to a more or less extent the integrity of the vascular support and diminish the propulsive force necessary for the proper function of the veins. Retroflexion of the uterus, which is usually the result of subinvolution, tends to slow the venous stream. Relaxation of the uterine supports, including a descensus after a prolonged second stage of labor, is, in the opinion of the writer, a very common cause of venous stasis.

Apart from the results following child-bearing, the conditions favoring varicocele are increased abdominal pressure from constriction of the upper abdomen, by tight corsets, bands, etc., abdominal ptoses, new growths (tumors, etc.), inflammatory processes, adhesions, constipation, and extensive hyperemias, such as are caused by overindulgence in coitus, constant and unsatisfied sexual desire, and masturbation, which so flood the venous exits as to induce passive congestion.

In the writer's experience the most frequent causes, especially in the young woman or nullipara, are a sigmoid adherent to the outer third of the broad ligament and constipation, either a complete failure to empty the bowel at proper intervals, or only partial evacuation. In a great many instances, where the lower bowel has been emptied, the upper part of the sigmoid or the descending colon may remain full for days or weeks. The mechanical pressure exerted by a constantly distended bowel must necessarily tend to obstruct the flow in the ovarian vein and produce dilatation of the venous plexus of the broad ligament. There is no doubt that many women could be relieved of their left-sided pains if the simple operation of ligation of the varicocele were more frequently performed. In youth and adult life, where health and vital forces are above par, nature, in her wonderful supervision, is able to overcome such obstacles if the opposing forces are not too long applied. If, however, the stress continues beyond the sustaining point, or the vital forces have been weakened by debility, child-bearing, or disease, the result is a compensatory dilatation of the venous plexuses, which is designated as a varicosity.

No one will deny that varicosed veins cause pain, and a pain that is very characteristic in that it is a dull ache of a very annoying persistence at times, while at other times it is sharp, shooting, or neuralgic.

Pain of this kind is usually made light of by most women for a long time, for two reasons: first, because, as a rule, it comes on slowly and for a while is not unbearable, and tradition teaches that there is always some pelvic pain of a negligible character following child-bearing; and second, most women believe that there is a good physiological reason for mild pain during the menstrual life, or that, in some way, the normal ovary in performing its functions is to blame; and, too frequently, her ideas are seconded by her physician. When the suffering becomes too constant or too severe, the patient consults her doctor, and oftentimes discovering for the first time that she has pathological conditions of which she was completely ignorant, readily consents to treatment or operation. It is not uncommon to find that a great many

women, after the usual gynecological operations, continue to complain of the same old chronic pain which existed before going to the hospital, and it is very difficult to persuade these women that everything had been done for the best.

The writer believes that if pelvic varicosities were given more consideration in the diagnosis of these cases, there would rarely be a case which would not give full credit to the surgical procedures. The diagnosis of pelvic varicocele must usually be made by elimination. Sometimes it may be felt as a fulness in the outer portion of the broad ligament on bimanual examination, after elimination of the intestines and omentum. This fulness is easily compressible, but is without form, and resumes its bulk after the pressure has been removed. There is only a slight degree of pain elicited by the pressure. There is never an acute sensitiveness or any transmitted pain. In the presence of adhesions or agglutinated organs, the mass felt is very appreciable and less easily compressed. This appreciation, of course, is possible only when the abdominal wall is thin or very relaxed. It might be said that the combination of a dull, persistent, aching pain, as described above, with the absence of any gross lesions, is pretty good evidence of the existence of varicocele.

In the elimination of conditions other than gross lesions, great caution should be exercised in attributing the origin of the symptoms to the ovary; for chronic ovaritis, or sclerotic ovary, never gives rise to pain of such a description. The pathology of such an ovary is against such a possibility. Also, as this pain is usually one-sided, and as there is rarely much difference in the size of the ovaries, it is difficult to explain why one should offend and not the other. But tradition teaches, wrongly as the writer believes, that these ovaries are offenders, and many an ovary has been partially or wholly sacrificed for that reason, generally without relief of the symptoms.

Medical treatment of this condition is only palliative. The use of tampons and pessaries, or rest in bed with the foot slightly elevated, sometimes gives relief for the time being. As in male varicocele, the only permanent cure is obtained by surgical means before or after the cause has been eliminated. The abdomen should be opened and the varicosities double ligated, and either excised or simply divided. Double ligation alone is efficacious, but there is the chance of the reëstablishment of continuity, which is absolutely prevented by excision or division.

Where there is doubt as to the exact diagnosis, an exploratory operation is justified. It is almost an axiom of modern surgery that when the evidences of a lesion, gained by a study of the symptoms and examinations, are not sufficient, an exploratory operation is demanded.

THE TREATMENT OF WOUNDS AND SUPPURATION OF THE JOINTS.

PAYR (*Münchener Medizinische Wochenschrift*, Jahr. 62, Nr. 39) states that differentiation must be made between benign, superficial suppuration of the joint (empyema) and grave, deep-seated phlegmon of the soft parts (panarthritis). In the latter there are necrosis and abscess-formation below the synovial membrane, resulting in extension to adjacent structures. The majority of cases of phlegmon are secondary to empyema of the joint, and to prevent this is the most important task in the treatment. In empyema of the joint breaking through of the pus into the deeper structure is favored by the anatomical peculiarities of the tendons and ligaments. Once broken through the pus is apt to burrow along the tendon sheaths and the connective tissue of the intermuscular spaces and spread far from the infected joint. Many joint infections have their origin in fragments of missiles which have penetrated the joint capsule and which are not at first observed by the surgeon. The joint shows infection after having run a quiet course for days. Even after sufficient incision and drainage the foreign body may give rise to reinfection; therefore, under all conditions, and at the latest when infection

manifests itself, the foreign body should be removed. Suppurating fractures in the region of the joint are also sources of joint infection.

In the treatment of infected joints the pus should be evacuated, the foreign body removed, and drainage carried out for a time. In empyema simple incision may suffice, but in phlegmon long-continued drainage by means of glass tubes is necessary. These should be placed in the dependent parts of the joint so as to best favor the outflow of secretion. After evacuation of the joint capsule the cavity should be injected with an antiseptic solution, as phenol-camphor, in order that it may not collapse too quickly and form adhesions.

In cases of phlegmon it is necessary to lay the joint open freely by cutting important ligaments and tendons. Chronic suppuration, especially in ball-and-socket joints, frequently necessitates late resection. In the after-treatment permanent extension gives the best results. In almost all the large joints perforation and spread of infection takes place in a definite manner owing to anatomical peculiarities, a knowledge of which will be of value in the treatment. The object of the treatment in suppuration of joints is to get finally a movable joint. This may be accomplished even in severe infections. Early movements of the joint are requisite to good results.

POSTOPERATIVE RENAL INFECTION.

WARD (*Surgery, Gynecology and Obstetrics,* October, 1915) calls attention to the frequency with which renal infection follows operation. The greater frequency of involvement of the right kidney is probably due to its greater mobility and its more frequent displacement, the drainage from that organ being less perfect in such cases, owing to kinking or looping of the ureter.

The preponderance of cases in females has been noted often, and is due probably to the fact that floating kidney is more common in that sex. Cotton also points out that the operation of decapsulation and drainage not only relieves the infection, but results in fixation of the kidney, and thus corrects the prolapse, which may have been a factor in the etiology.

Baisch states that while other bacteria may be the original factor in the production of the primary infection, they are supplanted by the colon bacillus; or that, if a mixed infection is present, the colon bacillus persists after the others have disappeared.

The common association of this disease with operations upon the intestinal tract, as for appendicitis, may account for the frequency of colon bacillus infections. Anything that causes a lowered resistance of the kidney makes it a suitable soil for the infection which is commonly passing through it by way of the urine, whenever infection is present in some part of the body. Undoubtedly the pyelitis of pregnancy and the puerperium is but a phase of these cases of kidney infection. The condition of pregnancy predisposes to the attack on account of the pressure by the gravid uterus on the blood-vessels and ureters, causing an increased congestion and less perfect drainage of the kidneys; and the ever-present colon bacillus in the neighborhood of the parturient canal and the frequency of parturient wounds supply the primary focus of infection.

There are three types of the infection, depending upon the degree of virulence—and the virulence naturally varies according to the particular organism—the condition of the kidney, and the general bodily resistance of the patient. They are:

Cases which are mild in character, the patient not being severely ill, which yield to the thorough flushing of the kidneys by the ingestion of water and formaldehyde, and which yield to proper diet and rest.

Cases in which the kidneys contain numerous septic infarcts, and minute or microscopic pus-foci, which are superficially situated in the cortex of the organ. Decapsulation or incision with drainage usually results in recovery.

The fulminating type, which is characterized by a profound toxemia, and which

is rapidly fatal unless a nephrectomy is done. Fortunately this type of the disease is usually unilateral.

The staphylococcus and streptococcus infections produce an abscess formation which originates in a terminal vessel in the cortex as a single focus. From this primary focus other portions of the kidneys become involved secondarily. As might be expected this type of the disease is the more severe. The colon bacillus produces a diffuse inflammation of the kidney which does not necessarily result in abscess formation or destruction of tissue. The kidney is enlarged, markedly congested, and infarcts are present. Microscopic examination of these areas of kidney-tissue may show the cells riddled with colon bacilli. This type of infection is less virulent than the former, and is frequently cured without sacrificing the organ.

As the less severe type of the disease is usually due to the colon bacillus, the presence of this organism in the urine gives rise to a characteristic appearance. The urine is turbid or cloudy, and remains so on standing. This is due to the motile power of the bacilli, which keeps them in constant motion and thus prevents them from sinking to the bottom of the glass as other organisms do, with the exception of the proteus hauseri.

Urine containing the colon bacillus is nearly always of an acid reaction. Marked irritability of the bladder is present due to the discharge of pus thereinto. This irritability, as manifested by frequency of micturition and dysuria, is often an early sign of the onset of the disease, and the author believes that many cases in which the nurse has been held responsible for a supposed cystitis, due to carelessness in using the catheter, are really due to a renal infection of hematogenous origin.

In the treatment of mild cases of infection of the kidney the indication for conservatism is not disputable, and in the fulminating type with the presence of abscesses we have no choice but a prompt nephrectomy. But the proper treatment of the second type of the infection cannot be so clearly defined. Much depends on the progress of the disease in each individual case, and to decide correctly when to operate and when not to operate calls for the exercise of great care and thoroughness in considering all the factors, and sound judgment in weighing their relative value. The general principle governing the line of treatment should be that of conservatism coupled with a sharp watchfulness for signs and symptoms indicating that the point of toleration to toxic absorption has been reached by the patient, the result of lowered resistance caused by the progress of the disease.

At the outset, palliative measures such as rest, a simple and unirritating diet, the ingestion of large quantities of pure water, with the employment of urotropin or other urinary antiseptics, should be instituted and maintained so long as the resistance of the patient is equal to the task of combating the toxemia. Should the limit of the patient's ability to resist the disease be approached, as shown by the blood count and a continued high range of temperature and increasing pulse-rate with evident progressive loss of strength, operative interference is indicated.

It is important in employing urotropin to give a sufficient quantity to insure the presence of formaldehyde in the urine. As has been pointed out by Burnham, it is necessary to test the urine frequently for formaldehyde to be certain that it is being liberated. The usual dosage of five to ten grains three times daily is rarely sufficient, and it should be increased up to twenty- or thirty-grain doses if necessary to show the drug in the urine. As the antiseptic power of urotropin is not manifested in alkaline or neutral urines, the acidity should be assured by giving acid sodium phosphate.

If operation is necessary, nephrectomy should not be done unless the indications for it, as shown by the appearance of the kidney, are positive. A decapsulation or nephrotomy with drainage is sufficient in many cases, as shown by numerous reports, especially in the colon bacillus infections.

Lilienthal was probably the first to do a

nephrotomy in a septic kidney. He reported a striking case of bilateral hematogenous infection with recovery following a double nephrotomy in 1896.

THE PREVENTION OF PERITONEAL ADHESIONS.

PRIBRAM (*Archiv für klinische Chirurgie*, Bd. 105, Heft 2, 1914) reports upon experiments carried out in Payr's clinic with a view to prevention of peritoneal adhesions. The material used consisted of the vitreous humor of the eyes of sucking calves obtained under aseptic precautions at slaughter-houses. The experimental animals were dogs, cats, and rabbits. It was first shown that the vitreous humor did not produce anaphylaxis, fever, or any other disturbance, and that its introduction in large quantities into the peritoneal cavity was well borne by the animals. The experimental animal was etherized, the hair shaved, and the skin washed with ether, alcohol, and tincture of iodine. A median-line incision was made, and at once the peritoneum sutured with continuous silk suture, the muscle and fascia with catgut, and the skin with silk. The line of sutures was painted with tincture of iodine and an aseptic dressing applied. Then the vitreous was injected into the peritoneal cavity. Control animals were used in each instance. The effect of the vitreous is to render the peritoneum very slippery and to gradually spread over the entire surface. Primary adhesion is either entirely prevented or at least very much reduced, as shown by comparison with control animals. It will not prevent adhesions as a result of infection or wide-spread chemical action.

REVIEWS.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By James M. Anders, M.D., Ph.D., LL.D. Illustrated, 12th Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia, 1915. Price $5.50.

When twelve editions of a book have appeared in eighteen years, and it has been reprinted a number of times, it may be fairly presumed that a large number of the profession are thoroughly familiar with its quality, and another fair presumption is that it must have proved valuable to those who have purchased it in previous years. In the present edition a number of important articles have been rewritten, or added to, as, for example, those on Diabetes Mellitus, Gastroenteroptosis, Acute Anterior Poliomyelitis, Splenomegalia; otherwise, the additions which are named in the preface do not seem to be of importance.

The paper used by the publisher is so thin that the hue of the ink on the other side is perceptible, which is annoying to the reader.

The book has always been characterized by the use of tables employed for differential diagnosis, and as it is written by a practicing clinician there is a full recognition of the needs of the man working at the bedside. In some chapters a considerable number of foot-notes are appended as to literature which the author thinks is important.

We note with interest that the author thinks that creosote has found a new field of usefulness in the treatment of the fever of tuberculosis, thinking that its use in these cases cures a gradual diminution of febrile movement. We confess that we have never seen such results accrue. We also question whether it is fair to speak of mineral acids and zinc oxide as antipyretics. Surely none of these ever act as true antipyretics and are not to be classed with phenacetine and acetanilide. So, too, we have never been able to see that zinc oxide taken internally will stop sweating. We regret that camphoric acid as a remedy for sweating in tuberculosis is not mentioned. The directions that formalin may be inhaled in pulmonary tuberculosis without a definite statement as to how weak the solution is from which the formaldehyde gas is obtained, might, in the hands of the inex-

perienced, cause a severe bronchitis. Quoting Stengel as having recommended the hypodermic injection of camphor as a stimulant in typhoid fever is correct, but as a matter of fact Graves of Dublin, long before Stengel was born, employed this drug for this purpose with excellent results. We are sorry to see that the author refers with favor to the gradual cool bath. This bath does not produce reaction, and reaction is what is desired. On the other hand, we cordially indorse the writer's condemnation of the ordinary antipyretics in these cases. So, too, we are heartily in accord with the author in the belief that turpentine is a useful drug in the later stages of this disease.

In discussing the subject of hemorrhage in typhoid fever we note, with surprise, the statement that if the blood has a poor agglutination reaction, phlebotomy to the extent of about 10 ounces may be practiced. We fail to see how such advice can be advantageous, as agglutination has nothing to do with coagulation, and even if a patient has not lost a great amount of blood in one hemorrhage, he can ill afford to lose blood through venesection with the prospect of other hemorrhages before him.

In discussing the wiring operation upon aneurism it is interesting to note that the author does not quote from those who have performed this operation most frequently in this country, but from those who have reported only a very few cases. Care is not taken to describe the fact that gold wire should be used, and the statement is made that the operation is not without serious danger in view of hemorrhage or embolism. To the best of our knowledge neither of these accidents has ever occurred if the operation has been properly done and where the case was properly chosen, or, in other words, has been a sacculated aneurism. Nor has any other accident occurred during or immediately after the operation which would justify an opinion that the operation in itself is dangerous, considering the grave condition which is present.

The author has succeeded in crowding within the covers of the book an extraordinary amount of information derived from literature and from his own personal experience, and it is a credit to him as a useful, practical piece of work.

YOUR BABY. A Guide for Mothers. By Edith B. Lowry, M.D. Forbes & Company, Chicago, 1915. Price $1.00.

As may be imagined the intention of this book is to instruct young mothers in the care of their infants.

Altogether there are 16 chapters. The first eight of these deal with the Mother During Pregnancy and After Childbirth; the last eight deal with the Baby.

We are inclined to think that the first eight chapters are qualified to do quite as much good, if not more, than the last eight, since there are many books upon the care of the baby and very few upon the care of the expectant mother. We think that far too little emphasis is laid in the chapter upon the Accidents of Pregnancy, upon the gravity of edema, and evidence of renal involvement. It is true that a patient is advised that when there is any diminution in the amount of urine passed, or upon the appearance of any swelling of the feet and ankles, to consult a physician, but the authoress might have added that not only is this advice wise, but it is essential that it be followed. There are few conditions met with in medicine in which so much can be done in the way of prevention, and so little can be done in the way of treatment, as in eclampsia.

In the preface of the book certain facts are stated which are of interest, if they are true, as, for example, that in postmenstrual conception the child is more likely to be a girl and in antemenstrual conception a boy. Some evidence is given that the authoress believes in the effects of maternal impression in producing sex. The authoress seems to believe, too, that the excess of female births over male births is due to the inertia of the parents or to the unhygienic laws of our social life, whatever this may mean.

We have repeatedly, in these pages, called attention to the difficulty of a medical author preparing text which could be recommended to the lay mind without deal-

ing too lightly with some subjects and too strongly with others, and without giving erroneous impressions to those who are not thoroughly familiar with technical matters. The authoress of this book has written a number of other volumes of semimedical nature, one of them being "Talks with Men Concerning Themselves," another "Talks with Women Concerning Themselves," "Talks with a Boy Concerning Himself," "False Modesty, and Teaching Sex Hygiene in the Home," and another entitled "Confidences, or Talks with a Young Girl Concerning Herself."

A Text-book of Physiology. For Students and Practitioners. By William H. Howell, M.D., Ph.D., Sc.D., LL.D. Sixth Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia, 1915. Price $4.00.

That six editions of Dr. Howell's very excellent book on Physiology should have appeared within ten years is evidence that it is appreciated by teachers, students, and practitioners, the more so as it has been reprinted several times during this decade. Naturally, most of the alterations in the text are to be found in the chapters dealing with Nutrition and Internal Secretion. A large part of these chapters has been rewritten. As the author points out, these subjects have their intricacies increased rather than diminished by investigation, and it is more, rather than less, difficult now, than it was a decade ago, to present a fair summary of the numerous facts and hypotheses bearing upon this topic.

As the book stands it covers a little over 1000 pages, fairly closely printed and excellently illustrated. As in previous editions, important contributions to physiology are marked by references in foot-notes.

Aside from the chapters upon Nutrition and Internal Secretion, we think that the general reader will find most interest in those devoted to the Circulation and Nervous System. The advances in our knowledge of the circulation have been almost as great as our advances as to the influence of glands, and he who studied physiology twenty years ago will recognize quite a different science in the physiology which is presented to-day by Dr. Howell. Too frequently the busy practitioner allows his knowledge of physiology, pathology, and anatomy to become dwarfed and stale by reading books which deal directly with his practice and ignoring those works which present to him the latest conceptions or knowledge of physiological and pathological processes. He will get an interesting view and summary of modern physiology if he will read these pages.

Post-mortem Examinations. By William S. Wadsworth, M.D. Copiously Illustrated. W. B. Saunders Company, Philadelphia, 1915. Price $6.00.

This volume had its birth by reason of the fact that Dr. Wadsworth has been for many years Coroner's Physician in Philadelphia.

It contains illustrations as to the methods which are employed in the making of autopsies, the Methods of Handling a Knife, of Weighing Parts, of Obtaining Cultures, and minute details as to the incisions and dissections which are necessary for the proper discovery or examination of lesions produced by disease or injury. Every page of the book gives evidence of the author's intimate knowledge of the subject with which he is dealing. Indeed, the text differs from that of many volumes in that the author uses the personal pronoun very constantly.

The book can be recommended as an able presentation of this subject to coroners, physicians, teachers of pathology and morbid anatomy, and to students of medicine, and it will prove interesting to all those officers of the law, medical or otherwise, that have to deal with medicolegal matters.

One of the interesting parts of the book deals with death from electricity, and another, which is particularly interesting at the present time, is that which discusses death from gunshot wounds.

Practical Prescribing and Treatment in the Diseases of Infants and Children. By D. M. Macdonald, M.D., F.R.C.P.E. Oxford University Press, New York, 1915.

Although the title of this little book is long, its contents are short, covering less than 200 pages. It describes the treatment which the author thinks should be used in

most of the common infections of childhood, the diseases being arranged therapeutically. The opening pages deal with a dose list and are followed by five pages in which diet is discussed. There are a number of diseases mentioned which are so rare in children as hardly to deserve a place, as, for example, migraine and ascites. Ascites, of course, is never a disease, and when it occurs in children is due to cardiac or renal disease, or to tuberculosis. So, too, condylomata must be a very rare condition in little children. The same thing holds true in regard to Bell's palsy. Nevertheless, notwithstanding these suggestions or criticisms, the book has many little tips or points which busy practitioners may find useful.

The description in detail of the employment of tuberculin as a diagnostic agent by hypodermic injection in children is, we think, unnecessary and unwise. Surely this is a type of case in which tuberculin should not be given by hypodermic injection for diagnostic purposes. Should a tuberculin diagnostic test be desired the Morro or von Pirquet reactions are certainly adequate.

A MANUAL OF PATHOLOGY. By Guthrie McConnell, M.D. Third Revised Edition, Illustrated. W. B. Saunders Company, Philadelphia, 1915. Price $2.50.

In preparing the first edition of this Manual of Pathology in 1909 Dr. McConnell recognized the fact that we already had a number of exhaustive treatises covering from 800 to 1000 pages, and that there was room for a smaller manual, freely illustrated, which would suffice to give the student practically all the information that he needs in studying this department of medical learning. Although three editions have appeared in the nine years since the book came out there have, nevertheless, been several reprintings.

The illustrations are far better than those commonly found in books of this character. Every definition is clear, and they are at once sufficiently true to nature and yet sufficiently diagrammatic to be interesting and instructive. Much attention must have been given to the press-work in order to make the black-and-white illustrations so clear.

From what we have said it must be evident that the book is not intended as an exhaustive manual, but rather as a summarization, not so condensed as to be like a quiz book, and yet not so diffuse as to be difficult to study. Any student who will faithfully study these pages will be amply rewarded by the accuracy of his knowledge.

MEDICAL HINTS FOR THE USE OF MEDICAL OFFICERS TEMPORARILY EMPLOYED WITH TROOPS. By J. Edward Squire, M.D., F.R.C.P., D.P.H. Oxford University Press, New York and London, 1915.

The object of this volume is clearly described in its title. It covers a little over 100 pages, and deals in 14 chapters with Acute Infections, with Diseases of the Digestive and Respiratory System, the Heart, Rheumatism, Tonsillitis, Body Parasites, Frost-bite, Gassing, Arsenical Poisoning, Effects of Tobacco and Alcohol, Malingering, Marching, and Discipline in Hospitals.

It will interest our readers to know that in the discussion of the subject of Tobacco, although the author recognizes the fact that its too free use may impair a man's marching powers, he says that, on the other hand, the soldier seems to get so much satisfaction and solace from it that to restrict it, to what might be considered healthy limits, possibly outweighs the disadvantages of excessive consumption; although there might be some gain in health, the net result would be a loss in efficiency. And, again, smoking becomes a part of the life of a soldier in the field; to deprive him of this is to inflict a hardship.

THE CARE OF THE BABY. By J. P. Crozer Griffith, M.D Sixth Edition, Thoroughly Revised. W. B. Saunders Company, Philadelphia, 1915. Price $1.50.

Twenty years have elapsed since the first edition of this book appeared. During that time it has been reprinted on a number of occasions. Each time a new edition has come from the presses we have reviewed it in these pages in terms of praise. Written by one who is well qualified to deal with this important subject, it provides the nurse and mother with much useful information in

regard to what they should do for children in their care. The difficult problem of preparing text for the laity has been as well met as it is possible to meet it.

THE PRACTICAL MEDICINE SERIES. Under the Editorial Charge of Charles L. Mix, A.M., M.D. Volume 6: General Medicine, Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.S., M.D. Series 1915. Year Book Publishers, Chicago.

In previous years we have referred to this book, which is designed to present a summarization of medical literature during twelve months. It is a small volume of over 300 pages containing a number of illustrations, giving the references to the literature which is quoted. The contents are arranged: First, Infectious Diseases, then Diseases of the Alimentary Canal and the Liver and Gall-Bladder and the Pancreas. We do not find in the table of contents any reference to diseases of the respiratory or circulatory system, nor to the genitourinary tract.

THE MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY FOR 1916. William Wood & Company, New York, 1915.

Year after year we have noticed the appearance of this excellent visiting list, which is used by medical men as an indispensable part of their records.

Its first 31 pages are taken up with a large amount of information which is supposed to be of use to the physician, as Doses, Lists, Metric and Apothecary Equivalents, Methods of Performing Artificial Respiration, Treatment of Emergencies, and, last of all, Hints on the Writing of Wills. Following these are blank spaces for the recording of Visits to Patients, Consultations, Special Memoranda, and Cash Accounts.

CEREBROSPINAL FEVER. By Thomas J. Horder, M.D. Oxford University Press, New York and London, 1915.

This little book is one of a series containing less than 200 pages, which has evidently had its origin in the increased prevalence of cerebrospinal fever because of the great European war. The rest of the series deal with other topics cognate in medicine or in surgery. By its aid it is hoped that the army and navy medical officers in the English service will be able to diagnose and treat such cases early and with skill.

Full credit seems to have been given to Flexner for his investigations, both experimental and clinical.

As a brief summarization of an important subject the book can be commended.

The general practitioner in this country whose library is well equipped with first-rate works upon the practice of medicine will not require it.

THE AMERICAN MEDICAL DICTIONARY. By W. A. Newman Dorland, A.M., M.D. Eighth Edition, Revised and Enlarged. W. B. Saunders Company, Philadelphia, 1915. Flexible Leather, $4.50; Thumb Index, $5.00.

It is not necessary to attempt to review the eighth edition of Dorland's Medical Dictionary, which has become one of the standard medical dictionaries in the English language, and is recognized as such not only in this country but abroad.

The present edition is a large octavo volume of 1135 pages, with 331 illustrations, 119 of which are in colors, and it contains more than 1500 terms which were not in earlier editions. As in past issues, it contains many tables whereby an immense amount of information is put in condensed form. The book is one which we constantly refer to. We need not recommend it. All that is necessary is to call attention to the fact that, by means of a new edition, the author has brought his very noteworthy contribution to medical book-making thoroughly up to date.

AN INTRODUCTION TO BACTERIOLOGY FOR NURSES. By Harry W. Carey, A.B., M.D. F. A. Davis Company, Philadelphia, 1915. Price $1.00.

Some time ago, in calling attention to a book of this nature, we raised the question as to how much need there is for a nurse to study even the elementary principles of bacteriology, aside from the instructions which she may receive in antisepsis and asepsis. Whatever may be the opinion of others in regard to this matter, it can be said of this book that the author takes care not to go too deeply into his subject, giving

the nurse just about what she should know concerning bacteriology, if she is to know anything of this science.

The book is interleaved with blank pages for notes which the nurse may choose to make to aid her when studying the theme presented by her lecturer in her training school.

As a book which will enable the nurse to act in the physician's laboratory as his assistant, by making bacteriological examinations, it cannot be commended. It is rather a work for the pupil nurse than for the graduate nurse, and does not profess to go deeply into this subject.

WOUNDS OF THE THORAX IN WAR. By J. Keogh Murphy, M.C. (Cantab.), F.R.C.S. Oxford University Press, London, 1915. Price $1.00.

The author states that he was asked by the Editor of this series to write a short practical account of wounds of the thorax received in war for those who have begun the art of repairing wounds inflicted by their "brethren." He gives in this small brochure the result of his own personal experience as well as that of those with whom he has been brought in personal contact.

In the chapter devoted to The Causes and General Clinical Features of Wounds of the Thorax in War, observations made on the bayonet wound show that it is septic from the beginning and hemorrhage is severe. Shell wounds of the chest are wide and ragged. The hand grenade causes much the same wounds as those due to shells. The modern bullet wound of the soft tissues is eminently a merciful one; if the bullet ricochets or hits some hard substance in the patient's pocket it is quite otherwise, the wounds becoming septic throughout. As to the thorax, the lung wound in itself does but little damage. Indeed, within three or four days of the injury it would be difficult to find post mortem the actual track of the bullet through the lung. Shrapnel bullets do not penetrate far. They produce jagged, painful wounds which are always septic. Immediate death from wounds of the thorax is by no means as common as might be imagined. There are grounds for believing that even perforations of great vessels are not uniformly fatal. The amount of shock entirely depends upon the amount of damage done to the thoracic wall, having no reference to the injury to the lung. There is little pain connected with the infliction of such wounds. There is temporary dyspnea, which soon passes off. Hemoptysis is not common. The idea of immediate treatment is to put the patient and his chest at rest, a hypodermic of morphine, with atropine, ½, ⅔, or even a whole grain being advised. He should be given plenty of water to drink.

There follow chapters devoted to varieties of wounds of the chest, later effects produced by penetrating wounds, Pyothorax, Pneumothorax, Gunshot Injuries Involving the Thorax and the Upper Abdomen, Surgical Treatment of Wounds of the Thorax, Rarer Septic Complications, Bacteriological Therapeutic Methods.

A thoroughly interesting, readable brochure bearing upon every page the mark of a large experience is that reviewed.

NERVE INJURIES AND SHOCK. By Wilfred Harris, M.D. (Cantab.), F.R.C.P. (Lond.). Oxford University Press, Henry Frowde, London, 1915. Price $1.25.

The distinguished author states that an outstanding feature of the casualties in the present war is the very large number of cases of nervous exhaustion, neurasthenia, and functional paralyses of various kinds which are being met with. With proper suggestive treatment cases of nervous shock can be immediately or completely cured.

The first chapter begins most entertainingly, the author pointing out with singular lucidity that "injuries to the brain are the result of violence varying in extent and character according to the weapon and the force of the blow; thus injuries may be inflicted by violent contact with a hard, blunt instrument, such as a paving-stone, or against a wall; by a heavy semisolid vessel, such as a sandbag (an American hooligan method of attack)."

As to the treatment of cerebral injuries the most important point is "to avoid doing too much." For at least six hours after an

accident involving injury to the brain the author urges against "administering restoratives in the shape of food or brandy poured into the mouth." He insists that the clothes should be cut off. Nor should the scalp be sutured for several hours after securing bleeding points.

There is a discussion of fracture dislocation of the spinal column and a brief but good section on Brachial Plexus Injuries. Neurasthenia incident to nervous shock is treated by suggestion and psychanalysis.

THE STRETCHER BEARER. By George M. Dupuy, M.D. Oxford University Press, Henry Frowde, London, 1915. Price $1.00.

An excellent book, profusely and most intelligently illustrated. A manual for both physician and layman who would be familiar with the methods of lifting, transporting, and handling injured people. The legends after each illustration are so descriptive that any intelligent person can apply them to himself or to a group wishing to obtain training in this direction.

GUNSHOT INJURIES OF BONES. By Ernest Hey Groves, M.D., M.S. (Lond.), F.R.C.S. (Eng.). Oxford University Press, Henry Frowde, London, 1915. Price $1.25.

This book, written in the hurry and stress of active military service, emphasizes certain general principles regarding bone injuries. The author urges against the mistake of doing too little, speaks of "a light caressing touch" in the treatment of fractures, argues with much discretion the subject of operation, and describes and pictures some ingenious and serviceable dressings. The reviewer feels that this book may have been written by request rather than because the author was touched by a divine enthusiasm to give to the world newly discovered truths.

ABDOMINAL INJURIES. By Rutherford Morison and W. G. Richardson, M.B., F.R.C.S. Oxford University Press, Henry Frowde, London, 1915. Price $1.00.

This book is written for the purpose of aiding medical men who may be called upon to act in emergency, and whose knowledge of abdominal surgery may have grown somewhat rusty. If a fair concept of its purpose be borne in mind none but favorable criticism can be accorded the work. There seems, however, no good reason for giving the details and technique of abdominal operations in a work such as this; every reason for describing transfusion, enteroclysis, and other life-saving measures. The distinguished authors state that after the third day some patients continue to retch and bring up mouthfuls of what they have swallowed. "A glass of champagne with a little food, such as a raw meat sandwich, will sometimes put an end to this trouble."

About half the book is devoted to a description of major operations which in the hands of the inexperienced are likely to be far more fatal than the injuries for the relief of which they are performed.

SURGERY OF THE HEAD. By L. Bathe Rawling, M.B., B.C. (Cantab.), F.R.C.S. (Eng.). Oxford University Press, Henry Frowde, London, 1915. Price $1.25.

A chapter devoted to Applied Anatomy, 35 pages; Injuries to the Scalp and Brain discussed in a perfunctory style. Chapters devoted to Fractures of the Vault showing a fairly well-digested summary of text-book literature. Indeed, there is little to condemn or to praise in this volume.

INJURIES OF JOINTS. By Robert Jones, Ch.M., F.R.C.S. (E. & I.). Oxford University Press, Hendry Frowde, London, 1915. Price $1.25.

An excellent manual containing much that is potentially but not essentially military and a model of what an educational handbook for the profession should be. That it is called a war primer does not lessen its value.

WOUNDS IN WAR: THEIR TREATMENT AND RESULTS. By D'Arcy Power, M.B. Oxon., F.R.C.S. Eng. Oxford University Press, Henry Frowde, London, 1915. Price $1.00.

Some good strong words from a man who has been there, seen, and done. Not largely helpful, since help to the individual can only come through personal experience, nor does it seem possible to pass this on in books. A thoroughly readable and instructive work. A chapter devoted to Vaccine Treatment of Wounds, perhaps in accordance with the

fashion of the day. A small section on Ligature of Arteries suggesting an ordinary text-book. An interesting section on Tetanus and Gas Gangrene.

It is somewhat amazing to find that the author states that when a limb is affected by gas gangrene infection amputation high up affords the best chance of recovery. Perhaps his manuscript was submitted to the printer many months since.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

During the past fortnight we have experienced a considerable change in the climatic conditions which prevailed in the preceding month. Instead of warm weather with a number of wet days, we are now experiencing a fine spell with cold weather and nocturnal frost. In London at all events we have not had much wind. The effect of the early frost is shown in the country by the early fall of the leaf, and the trees have now for some weeks been practically denuded of the leaves, which generally remain on the trees until the present date.

It is interesting to be able to learn from those who return from abroad some few details of the conditions in France. I was told a few days ago that the weather over here is very much colder than it is in France, but on the other hand the wet over there is greater than it is here. One of the "flying men" told me that he had of late been flying in a temperature of 12 down to 0 degrees Fahrenheit, and that he had extreme difficulty in keeping warm. This was felt especially in the feet and hands. For the latter he wears three pairs of gloves, silk, kid, and finally fur-covered gauntlets, but he was constantly finding his hands dead, and that, too, in spite of the fact that his peripheral circulation presented no abnormalities.

The cases now being admitted to hospital show a certain amount of similarity to those admitted this time last year. There are a number of trench feet, but these on the whole are not so severe as those of last winter. With a greater number of men, it is apparently easier to evacuate cases while they are comparatively mild than was the case twelve months ago. This condition of trench feet is not to be regarded lightly, as I still have under my care two cases from last autumn which have not completely recovered. In both instances the patients complain of pain on pressure under the big toe, and between the metatarsophalangeal articulations of this and of the second digit. As a result they are unable to bear the weight of the body on this part of the foot, and persist in walking with the foot inverted, so that the weight falls on the outer part of the sole. Any considerable amount of walking produces pain in the tibialis anticus muscle. There recently also came under my care a private who in civil life had been a laborer, who was suffering from a subacute attack of gout involving the dorsum of the left hand. I attributed the condition in this case largely to a change of diet. Whereas formerly he had been accustomed to meat two or three times a week, in the army he gets meat certainly more than once every day. Another type of case which is extremely satisfactory, and of which I have now met four or five cases, is one of complete or almost complete paraplegia, due to trauma in the region of the spine. In one case the spine of one of the vertebræ and probably one of the lamina had been knocked off. I did not see this patient till some five weeks after the injury. The report, however, states that he had been completely paraplegic, both arms and legs being involved, and cystitis being present. The latter remained, but he is now, six months after injury, practically well, is able to walk, and can move his hands and arms freely, and improvement is noticed week by week. In another case the bullet had apparently passed through the body of one of the

vertebræ. This man recovered completely, except that in one foot the extensor toe response remained. I believe, however, that this will finally disappear. I have not thought it advisable to draw off cerebro-spinal fluid in these cases, though such an investigation might have revealed traces of hemorrhage had it occurred. In yet another case, where the bullet had evidently passed anteriorly to the vertebral canal and seemed to have injured the body of the vertebræ, the legs escaped though the arms were temporarily completely paralyzed. This man recovered completely, with the exception of a little diminution in the freedom of the side-to-side movement of the head. We also meet with a number of cases of peripheral nerve injury, either directly by the bullet, or secondarily by the involving of the nerves in scar tissue.

At the Royal Society of Medicine, early in the month, a discussion on paratyphoid fever was opened by Sir Bertrand Dawson. It was especially interesting because he was able to show some of the pathological lesions associated with the disease. Among these specimens were some showing perforation in the ileocecal region, and abscess of the spleen. Otherwise, owing to the fact that papers have already been published on this subject, the opener had no opportunity of producing any very new material. He was followed by Dr. Dreyer, who gave a dissertation, perhaps unnecessarily long, on the results of blood culture in early stages, and of the Widal reaction in this disease, and in the case of genuine typhoid fever. The gist of his remarks was to the following effect: Since the army has been very well inoculated, one positive Widal test does not give any indication or proof of the presence of the specific disease, even though clumping may occur in high dilutions. It is, therefore, necessary to repeat this observation three or four times. If the patient is suffering from typhoid or paratyphoid the agglutination reaction will show marked variation in intensity from time to time with an upward tendency, whereas if he is not so affected the variation will be small and will have a tendency to be weaker on each successive investigation. The audience was more interested in the condition known as trench fever. This subject was introduced on a chart shown to illustrate the difference between a paratyphoid attack and trench fever. Sir W. Herringham, who was present, would not say very much upon the subject, because he was cognizant of a paper written by one of his coworkers, which was then in the press. This paper, by Captain Hunt and Major Rankin, gives a full description of the disease. The authors have not been able to throw light on its pathology. The discussion is to be continued.

As time goes on we are introducing a number of labor economies. One which has recently come to my notice replaces the old horse-drawn brush-roller street-sweeper, which used to travel at the rate of approximately three miles an hour, employing a driver and a fairly heavy type of horse. We now have a motor sweeper on the same principle, which moves at ten or twelve miles an hour. It forces itself on one's attention by a rather loud buzzing sound, which rises and falls as it approaches and passes, but is not at all unpleasant. It is at present driven by a man, but the innovation will be accentuated if and when the sex of the driver is changed.

Women are more and more taking the places of men. Their presence is most noticeable in such public places as railway stations and ticket offices. They are also acting as paper sellers, and have even invaded the ranks of the professional window-cleaner, but I understand that some of the public object to their presence in the latter capacity. There is one quite regular incident in connection with the papers which reminds one of similar occurrences at the time of the Boer war. A special edition of one of the Sunday papers is issued on Sunday evening, and it is a peculiar fact that the call boys, who on that night, and only that night, invade residential quarters, are always able to announce some big Allied success. The public, however, have long become wary, and I fear their business enterprise is suffering a setback.